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Persian and Arab Art at the Burlington Fine Arts Club.

THE Burlington Fine Arts Club (Savile-row) opened their exhibition of Persian and Arab art (to which we briefly referred in a "Note" last week) on Thursday, the 19th inst. It consists of upwards of 600 well-selected specimens of pottery, metal work, and textiles related to one another in certain styles of design and methods of work which are generally held to be common to Persia, Syria, Asia Minor, Arabia, and Egypt, of the fourteenth to the seventeenth centuries. These objects have been gathered from numerous private collections, and the discrimination which has guided the selection of them is suggestive to promoters of museums of art in exemplifying how much can be well done in comparatively small space. The very vastness of large collections often puzzles and misleads those resorting to them for purposes of study. Jostling one another, types of good and bad design, colour, and workmanship too frequently confuse the purpose of such collections; and the hideous and quaint find a justification in that importance which their presence is assumed to supply in support of conjectures on a putative nationality in style of art.

As its title implies, art claims the first attention of the Burlington Fine Arts Club, and it is comparatively an easy matter to define the limits of some exposition of art, whether from the point of view of subject in design, manufacture of object, or special use to which the class of object is put. But the Club has succumbed to an influence in vogue of attempting the elucidation of an ethnographical problem by means of artistic materials; and such questions as whether the geometric ornament of the Arabs, Persians, Syrians, or Saracens was devised in the desert from Chaldæan mathematical figures, or was the result of a Mosaic prohibition to imitate any subject of creation, are preferred to inquiries into the ornamental value of simple, elaborated, and indefinite expressions of involved angular forms. Then, again, the solution of ethnical uncertainties operates adversely to the study of methods of decorative manufactures, such, for instance, as lustred ware, which is not, from the standard of artistic effort, any more the special property of Persia in the sixteenth century than of the Gubbio potters of the same period; and, although the earliest traces of lustre ware are thought to have been found in thirteenth-century ruins at Kerman and Natinz, who in truth knows whether kindred metallic lustre did not exist years earlier and at other far distant places? So mixed has become the conception of the purview of art that archæology, ethnology, and chronology are confused within it; nevertheless the present exhibition was obviously not undertaken to glorify Persia and adjoining countries as the only producers of certain beautiful objects. The beauty of the works is its central cause; and, in this respect, the position which "Persian and Arab" art may hold in a review of art generally is a foremost consideration.

As here displayed, the subject matter of Oriental designs is almost entirely without a secondary or well-marked interest, as of myths, religions, and history. Geometrically-ordered distributions of geometric forms, orderly arrangements of elegant caligraphical characters, of floral forms and of ornamental devices, conventional in character, predominate. For pottery, colours are used in harmonies of two or three tones, of which the chief are greens (copied from natural subjects), blues (imitated largely from Nankin porcelain), reddish purples (an empirical ensign of Damascus ware), and clay reds (in thick impasto, the mark of Rhodian pottery). In textiles the colouring is more varied, and where the use of the material associates itself with the princely hunter in his tent, animals such as tigers, cheetahs, and antelopes, appear, intermingled with palmettes, Zoroastrian cypresses, and graceful flowing forms; in velvets and other hangings we have flowers and diaperings of bold tulip shapes. On engraved metal works warriors on horseback (as clumsy as those in stamped and painted tiles) are wrought in occasional pointed panels, which serve as the *points d'appui* for intricacies of arabesques. For the rendering of such themes, certain of the modes of expression were brought to a high standard of perfection by the craftsmen; as, for instance, in even and transparent glazes upon earthenware; in fine vitreous ware, a near approach, perhaps, in the absence of necessary kaolin, to porcelain, in specimens of damascened metal (although Scandinavians and Hindus have done as well), and in the costly examples of carpets and golden weavings, in making which, few, if any other people, achieved such triumphs of close velvety piles and wondrous brocades.

But with all this, there is no sign of such acutely-developed perception, vivacity, facility of representation, and daintiness in craft, as exists in Greek, Japanese, and much Italian work. On the other hand, this "Persian and Arab" art no doubt bears the palm, if balanced with that art of India which has recorded Buddhist and Brahmanical rites and events. After all, however, national rivalries had little to do with the production of "Persian and Arab" works. The wants of the mass stimulated the ingenious worker to make efforts to supply them; and the kingly heads of tribes and groups of people, the Timurs, the Khalifs and Shahs possessed a natural ambition to have things more rare, curious, and valuable than those used by their inferiors. Communities came to be more or less organised into art factories, and succeeded one another. The architectural monuments of earlier dynasties furnished the industrious craftsmen with attractive suggestions for novel purposes. Bodies of art craftsmen moved from place to place to execute imperial commissions. Intercourse, warlike and commercial, was, as it is now, a potent factor in creating imitations and adaptations. And a wave of Oriental art passed on to Europe to be stemmed and guided into devious courses by the differently-circumstanced artificers of the West.

This and much else may be gathered from the present exhibition, judiciously arranged to present an aspect rich in glow and contrast of colour and materials. A very few inferior specimens have unfortunately found their way into the collection. Above and between cabinets or glass cases, the greater number of which contain varieties of pottery, hang carpets, textiles, embroideries, and other fine fabrics. In Cabinets IV. and V. are specimens of metalwork; for the most part, engraved and pierced brass bowls, kettles, ewers, and candlesticks. But the more important of the metal works are near a fine trophy of objects in a recess at one end of the room. In the centre is No. 594, lent by Mr. William Morris, a large carpet of stately design, the elements in which consist of large pointed, curved-shaped panels, interclosing forms, similar in plan, though more fancifully treated in outline; amongst these recurrent figures are groups of floral ornament, some of which are careful representations of leaves, blossoms, and buds. The same character of design, with straight-lined diamond forms as the basis, is to be found in carpet No. 593, lent by Sir Hickman Bacon. The carefully-drawn floral forms,—as distinct from formal ornament,—are noticeable, too, in an exquisite velvet carpet, No. 355, lent by Mr. Salting, who also contributes No. 591, a marvellous carpet, refined in gorgeousness of effect, with light grounds of golden and silver threads picked out with velvet devices in rich blues and delicate greens, bordered with fair blue and yellow arabesques. This specimen is supposed to have been made by Persian workmen in Poland; but the evidence in favour of the supposition does not present itself on the face of the carpet, though there has been consider-

able effort to establish the reputation of a doubtful Polish factory.

Returning, however, to the metal works, two gaunt peacocks of brass (Nos. 262 and 312, lent by Mr. A. Ionides), studded with turquoise, lavishly engraved with ornamental letters and seated figures holding birds, occupy commanding positions upon the two cabinets containing respectively glass works, amongst which is a fine mosque lamp (No. 256, lent by Mr. J. Dixon, not up to the standard of those belonging to the Khedive, at South Kensington Museum), and tawdry Anatolian ware, and Gombroom glassy ware, or "porcelaine translucide." These cabinets are numbered six and seven, and flank the recess in which Mr. Morris's carpet hangs. In front of this, low down, is an engraved white metal bowl, good in form (No. 265, lent by Mr. Morris); while to the foreground stand one of a pair of lofty candlesticks,—some 8 ft. high,—of pierced and engraved brass, partly overlaid with white metal (No. 268, lent by Sir H. B. Bacon), covered with Arabic inscriptions and interlacing ornament, but made for use in connexion with Christian rites, since, as the catalogue entry explains, the texts are taken from the "New Testament and from the Liturgy." This is interesting, and so is the moulded Agnus Dei with cross (the device of Knights Templars) upon a salt-cellar (No. 273, lent by Mr. Charles Elton, M.P.); and a rude rendering, on the Coptic lamp-balances (Nos. 305 and 306), of the cross-winged heads or cherubimic devices, a favourite detail in English thirteenth century, as well as in twelfth-century Italian ecclesiastical embroidery and sculpture.

The oldest work of art in the collection is (No. 164) a marble fragment of a profile sculptured in bas-relief, attributed to the sixth century B.C., and recalling, in regularity of curled beard and hair, Assyrian treatment. It was discovered at Persepolis, in the year 1800, by Richard Strachey, father of the lender, Mr. R. Strachey, and demonstrates a higher type of drawing and modelling the human face than is discoverable in all the rest of the collection.

The Persians and Arabs are not remarkable in depicting the human form, though they have a distinct power in conveying energy in action to the curiously-represented members of the feline tribe and others, possible lions, probable cheetahs, and undoubted deer and antelopes. This may be remarked in the animals depicted upon No. 93,—a carpet lent by Sir Frederick Leighton. The influence of Chinese designs upon Persian pottery is conspicuous in Cabinet No. 3. Some specimens are marked with imitations of Chinese marks, but to the forms in blue and white the Persians gave, as a rule, outlines of black, which supply a special tone to the appearance of this class of ware. More curious, perhaps, are the Chinese dragons (No. 96) and the Fong Hoang or feathered chimera (No. 151), which appear in relief upon star-shaped tiles of dark blue and lustre. Near these latter is No. 144, lent by Mr. Holman Hunt. It occupies a central place over the chimneypiece, and is an oblong tile with Arabic inscription in relief, which contains the name of the "Expected Imam" of the Shah, also known as the Mahdi. The moulded or stamped ware with inscriptions upon grounds of scrolls and arabesques has kinship with very early specimens of this class of pottery, which has been long known in India, and the technical points of its make are allied with those of the ancient Egyptian bowl (No. 1) and vessel for offering libations to Osiris (No. 2), lent by Mr. Drury Fortnum. No dates are assigned to the examples of lustred ware in Case No. 11, though those of architectural importance, Nos. 507 and 508, lent by Sir H. B. Bacon are probably of the thirteenth or fourteenth century.

The great mass of wares, classified by similarity in design, and conveniently grouped under titles like Damascus and Rhodian, take shape in lamps, great rice-bowls, basins, plates, jugs, and long-necked bottles, and here the intermingling of the palmette, the Tartar cloud (a sort of waving riband ornament), the fine scrolls and concentric spiral lines, with flowers and figures, notwithstanding variations as to colour, almost merges into one class of design the whole of the articles of use in decorating which these details are employed. Mr. Drury Fortnum's Damascus lamp (No. 527), with its inscriptions from the Koran and the record of Mustafa, the "poor" and "humble" painter, dated, A.H. 956, in the month of Jemazi-el-oola (*i. e.* June, 1549), and Mr. L. Huth's bowls (Nos. 529, 533, and 538) are splendid specimens in the central cabinet of Damascus and Persian ware; whilst in cabinet No. 10, of Rhodian ware, the pieces obtained by Sir F. Leighton direct from Rhodes and in Lindos have a paramount importance in furnishing data for a classification of similar works.

In so hasty a survey mention is necessarily omitted of many objects of great interest, and limits of space make it impossible to touch upon such involved matters as must arise in distinguishing between Broussa and Venetian velvets, or in assigning Sicily, at its Norman period, as the birthplace of the "Persian" ivory casket (No. 176) lent by Mr. H. Wallis. The collection is very remarkable in having brought to light a number of treasures never before publicly displayed together, and the Burlington Fine Arts Club has cause to congratulate itself upon the generous co-operation it has received from over forty contributors, amongst whom are such distinguished connoisseurs and amateurs as Mr. A. W. Franks, F.R.S., Mr. F. Du Cane Godman, F.R.S., Mr. C. J. Ross, Mr. Frank Dillon, and others.

It remains to say that the descriptions of the objects have been most carefully given in the catalogue, whilst Mr. Stanley Lane-Poole has translated the Arabic inscriptions. Mr. Henry Wallis has written a few pages of "Introductory Remarks." These latter, however, are scarcely worthy of the exhibition.

AN ARCHITECT'S NOTES IN MALTA.

BY E. INGRESS BELL.

AFTER eight happy days passed in sailing over summer seas and under cloudless skies, the Island of Malta,—heralded by Gozo and Commino, the outliers of the group,—breaks upon our view, bare, brown, and steaming hot. With our glasses we can see St. Paul's Bay, the white statue of the Apostle of the Gentiles marking the scene of his shipwreck. Next we descry the dome of the famous church at Mousta, read of by all in Fergusson, as to which more anon. We cannot help noting in passing how very ill its contour suits its position, and long for the vertical lines of tower or campanile to oppose the undulations of the surrounding hills. The picturesque outline of Notabile, the "Citta Vecchia," stands out clear and dark against the glowing western sky. Sliema, the Brighton of Malta, is quickly passed, and, with skilful piloting, the good ship is gliding serenely round the dangerous Dragût point, the rusty skeleton of a wrecked steamer lying forlorn upon the rocks, and under the very guns of Fort St. Elmo, about which the history of modern Malta turns. As we pass Fort Manoël we call to mind the time when Sir Walter Scott, in that last vain search for the health which was never again to be his, was kept in quarantine within its ramparts. We can see at the head of the long flight of steps the very gate at which he sat and received from behind a barrier the friends who flocked to visit him, whose hands he was so hardly restrained from grasping, forgetting that a partnership in his "durance vile" would have been the certain penalty of such an indiscretion. The motion of the screw, to which we have grown accustomed, suddenly stops; perfect rest comes upon us with something of a shock, and our seaward journey terminates under the mighty flank of St. Michael's towering Bastion.

After the entertainment provided for us by the world-renowned Maltese divers, we drive apace up a narrow and tortuous white road, threading in and out between lines of white ramparts,—past priest, peasant, and beggar, all covered with a white powdery dust,—past trees of oleander and ibiscus, also white, across the drawbridge which trembles over the dark abyss of the main ditch which separates Valetta from Floriana, the bottom of which no eye can see, and whence the poor Turkish prisoners quarried the stone of which Valetta is built,—through the somewhat modernised Porta Reale, guarded by colossal statues of the Grand Masters L'Isle Adam and La Valette; and the Strada Reale, the Royal Street, bursts upon our enraptured view; a mile long, straight as a line, and closed at its lower or eastern end by a white lighthouse, bright in its setting of sapphire sea. No art could have devised so effective a preparation for the scene as that imposed by the exigencies of the lines of defence through which it is approached, and few cities can show so glorious a perspective as that of the Strada Reale of Valetta.

There are traces in Malta of a Phœnician occupation,—witnessed by memorials of high antiquarian interest; of a Roman occupation,—witnessed by the lately exhumed "villa," interesting alike to the antiquary and the artist; and there are here and there fragments of beautiful Sicilian architecture. But the real interest of Malta is bound up with the illustrious Order of St. John of Jerusalem,—those doughty priest-warriors, who, upon their departure from Rhodes in the year 1523, found a refuge in the Island of Malta, and consecrated it by their heroism.

The incidents of the long defence of Fort St. Elmo,—of its fall, of the victorious resistance of Fort St. Angelo, and of the final abandonment of the siege by the exhausted and dispirited Turks,—may be read in the stately narrative of the Abbe Vertôt, or in the more brilliant pages of General Whitworth Porter, who, as a soldier, writes with a fuller knowledge of the subject than the churchman could command. For us the immediate interest begins with the resolve of the Grand Master La Valette to build a city on Mount Sceberras,—that barren promontory which, dividing the two great harbours, commanded the defences of both.

"Of all the several places which had been fortified before the siege, there was none of them better situated than Fort St. Elmo. It was, in a manner, the very key to both ports. The Grand Master, without neglecting to take care of the other forts, formed a design of enlarging this and of adding new works to it, and resolved likewise to build a town upon the same neck of land, to strengthen it with all the fortifications that art could possibly invent, and to make it the residence of the knights."—Vertôt, ii. 41.

In furtherance of this design he sent for engineers and workmen from several parts of Italy,—and when the lines were marked out he, on the 28th of March, 1566, went in his robes of state, attended by all his knights, and with great ceremony laid the first stone of the city, which was henceforth to be called after his name.

"To perpetuate to the most distant posterity the memory of so remarkable an event, they threw on the foundation a great quantity of gold and silver medals, on which the city was represented, with this inscription,—

'MELITA RENASCENS.'"

We know, therefore, the circumstances of the foundation of the modern city, and we can guess the style of architecture which would result from the Grand Master's invitation to the Italian architects of the middle of the sixteenth century.

The "Order" was divided into eight "languages," viz., Provence, Auvergne, France, Italy, Arragon, England, Germany, and Castille, and each language had its separate "Auberge" or head-quarters. These inns were intended not only as the residences of the knights, novices, and serving-brothers of each section of the order respectively; but for the several reception of French, English, Italian, Spanish, and other pilgrims and strangers who might in their wanderings demand hospitality. Accordingly the architects framed their designs of ample dimensions, and in doing so set the key for all future Maltese building. The whole island was a quarry of soft stone, easily won and worked. It is not what we call a "weather stone," but it resists sufficiently well the climate of Malta. There the thermometer never falls below 45° Fahr.;

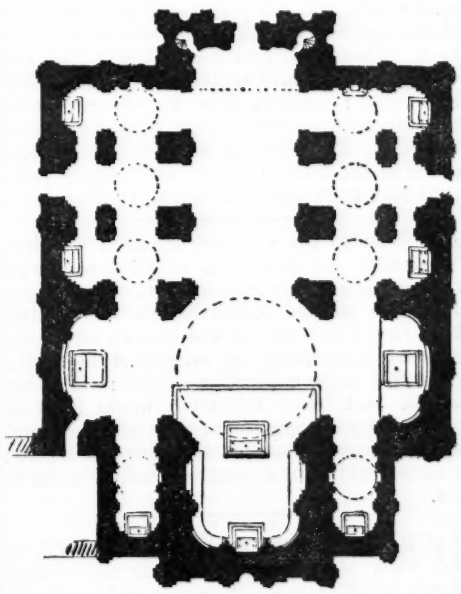
and fortunately so, for it is probable that an English winter following the rainy season would lay Valetta in ruins. Many of the inns built by the knights have been destroyed or converted to uses which have altered their distinctive character. That devoted to the English "language" appears to have been alienated to other uses soon after the "Reformation." But many of them still exist in all their pristine magnificence, to attest the lordly ideas of their builders. The Auberge de Castille is a palace appropriated as an officers' mess. The Auberge d'Italie is the headquarters of the Royal Engineers, and others are used as barracks. The Auberge de Provence is a club, and in it Sir Walter Scott was sumptuously entertained. Its banqueting-room, 90 ft. long, 50 ft. wide, and 45 ft. high, is a fair sample of the refectory or common room of these old inns. In plan they were arranged round a central court, the apartments on each side being approached by galleries or cloisters on the four sides. In these courtyards orange and oleander trees grow, brightening the interiors by their blossoms, and filling the air with fragrance. The halls, staircases, approaches, and domestic accessories are on a magnificent scale, and produce a marked effect upon all beholders; but the detail is coarse and the ornament meretricious and bizarre. Here, as elsewhere, the art of the smith appears to have been the last to yield, and to this day there is much grace and delicacy of design in the wrought-iron railings and balconies which adorn even the poorest houses.

Valetta and its sister cities are built upon rocky promontories which slope from central ridges to the harbours. For the most part the streets are laid out, as in American towns, in straight lines, crossing each other at right angles. The longitudinal streets of Valetta decline towards the Mediterranean at gradients which do not preclude carriage traffic. But the transverse streets fall towards the harbours at gradients which have necessitated cutting their rocky surfaces into those "stairs" at which,—*teste* Byron,—each traveller "swears." No carriage can, therefore, pass along them, that is to say, comfortably, for your Maltese carrozzi driver would drive you down the side of a house; and the races at Notabile actually take place along a road which in steepness is little short of a precipice. The houses are consequently built with their floors and roofs stepped one above another, and each one is independently designed for the slice of frontage allotted to it. This not only diversifies the skyline, but leads to a variation in the architecture of the streets which the dwellers in level towns lose in a depressing uniformity of façade, and long horizontal lines of cornice. One misses at first the chimneys, which would further break up the skyline, and which in Italian towns are generally picturesquely designed. But the Maltese as a rule light no fires, although they feel the winter cold severely. They cook by the aid of a little lighted charcoal, the fumes of which escape through a tiny channel in the outer wall. You may count upon your fingers the houses which have a "range," and thus it happens that the chimney is absent. There are but very few inclined roofs in the island. One, of low pitch, to St. John's Cathedral; one to the palace; and a roof of high pitch to the new English church at Sliema. The rest are all flat, and give to the towns an Eastern look. They are constructed of timber beams laid 2 ft. or 3 ft. apart, upon which rough stones are placed, and above them a sort of concrete called "turba," which is in turn covered by a kind of cement called "diffone," trodden down by the naked feet of women. In the vast halls of the auberges the beams are mostly of chestnut, of considerable scantling, brought from Spain or Sicily. Their sides and soffits are painted in bright colours, and small cross-beams divide the interspaces into panels of various sizes and figures. These are also gaily decorated, but scarcely moulded or carved at all. The floors are similarly constructed, the upper surfaces being of rubbed stone and painted. The interiors of the rooms are not plastered, but the ashlar shows everywhere, and the architraves to doors, windows, &c., are in stone or marble. Timber is used sparingly, as the island produces none. The rock would probably grow beech, birch, and pine. The Wellingtonia planted in the courtyard of the palace by the Duke of Edinburgh some twenty years ago is now a magnificent tree. But it is said that the Maltese have a superstition about trees, believing them to be inhabited by evil spirits, and that they cut down those which were planted by Sir Gaspard le Marchant when governor, and so robbed the island of much-needed green and more needed shade.

The Spanish "mirador," or corbelled and enclosed balcony, is a constant feature in Maltese domestic architecture. It enables the occupants of the rooms to which it is attached to enfilade the street in both directions, and it gives the gossips a coign of vantage of which they avail themselves to the full. These projecting windows have seldom any ornamentation other than a little carving on the corbels; but they are sometimes brightly coloured, and always cast deep and piquant shadows adown the house front. With a strip of coloured carpet hanging therefrom, they assist in the general gaiety of the streets, and on "Festa" days play an important part in their decoration.

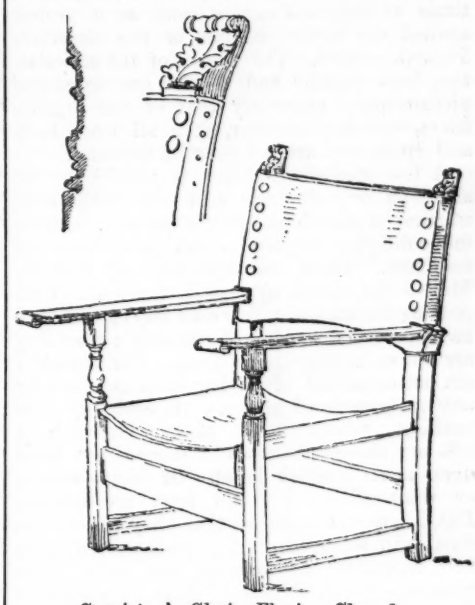
There is a curious similarity between the architecture of Malta and that of some of the Belgian towns, which is explained by the presence of the Spaniard. Spanish architects in great numbers were in all probability employed upon the city of Valetta. Those peculiarly licentious forms of Renaissance art which are distinctive of Spain,—those defiant discursive curly-wurly doorways and dressings, designed in what the late William Burges irreverently called the "God-dam" style, and which are plentiful in Antwerp,—have their exact counterparts in Valetta.

The ecclesiastical architecture of the island conforms in plan pretty closely to the type here sketched, and is impressive from its size and the liberal use of thick walls and broad surfaces. The exteriors are



Plan of Florian Church.

often disfigured by a redundance of coarse detail and ill-executed ornament, whilst the antics which the saintly personages play who occupy the various niches are grotesque almost beyond belief. But the interiors are often grand, and well adapted for the religious use for which they are designed. The light is admitted through hidden lanterns in the crown of the domed aisles; by a clearstory; or by a ring of sparse lights in the drum of the central dome. This method of introducing the light from a concealed source suggests the favourite trick of Rembrandt, who hides his candle behind a curtain, and only allows its diffusive rays to be seen. Not only does this furnish a very artistic result, so far as a scheme of lighting goes, but it leaves the wall spaces at liberty for the display of pictures, &c. With few exceptions the pictures are not deserving of so much consideration; occasionally they are simply horrible. Where German artists have been employed the result, if comparatively tame, is far more satisfactory. The Maltese are extremely devout, and the pictures which shock us secure, nevertheless, their warmest regard, and play, no doubt, an important part in the scheme of religious education. Almost every church has its treasures of gold and silver plate and sacred vessels, and in some of them the chalices, processional crosses, &c., are of great beauty and value, the knights having been allowed, on their expulsion from Rhodes, to take with them their church plate and furniture. Fortunately there is little stained glass in any of the churches.



Sacristan's Chair, Florian Church.

The peasants themselves have built their churches with their own hands, each one giving his labour and contributing his share of the materials. I saw a site near Misida marked out for a church by rows of flags of various colours. All day long a caretaker perambulated the vacant ground. But when the day's work in the fields was over, a hundred peasants were busy digging trenches, carting materials, and building the walls. And each day they continued the work, snatching between their ordinary labour and this labour of love a brief interval for a frugal meal of rye-bread and oil, a handful of figs, and a quiet pipe.

The church at Mousta is the show church of the island, mainly because of its variation from the common type. It is a copy,—with a difference,—of the Pantheon at Rome, "asses' ears" and all, and it has been treated by Mr. Fergusson in such detail that we need not go minutely into the particulars of its design. As usual, the exterior ornamentation is absurdly out of scale, and detracts from the really considerable dimensions of the edifice. Of the decoration of the interior the less said the better. It is sad to see the persistent expenditure of gold leaf and ultramarine with such dire results. I accepted an invitation to ascend the exterior of the dome, and found, to my confusion, that there are no parapets of any kind to protect the explorer of its many ascending ranges of masonry. One has to walk along the upper surface of the cornice, a mere ledge, with nothing to catch him if he stumble. The pretty handrail shown in Mr. Fergusson's woodcut does not exist. On the topmost platform but one I sat down to collect myself a little, when a "*gamin*" who had followed me up unobserved, seeing my embarrassment, thus addressed me:—"Sir, you are the fourth Englishman what have fall down from here and he found dead in our garden. You are the fourth!" "You are a nice boy," I said. "Yes, sir. Give me somsing." I should have liked to have given him "somsing": but it was no place or time for contentions, and I dissembled.

The costumes of the peasants are, so far as the men are concerned, picturesque and full of colour. The wide-brimmed straw hat, the coloured shirt, the bare brown breasts and feet, the gaily-coloured sash worn round the waist, and the tight blue trousers make a bright and

pleasant *ensemble*. A bevy of workmen returning from work, their mule gaily caparisoned with coloured scarves of the peasant women's weaving, its neck encircled by bells which jingle in the clear air, is a pretty sight. As they draw nearer you perceive that one plays a violin, one a viol, one a mandoline, and they all sing in low plaintive voices some melodious song of love. The women's costume is sombre. The universal garment is the "Faldette" of black stuff or silk, according to the condition of the wearer. It is used as a covering for the head as well as for the shoulders, and was adopted, it is said, as a penitential garb in times of national sorrow, and as a protest against the white costume of the victorious Turkish women. The dresses of the ecclesiastics, both regular and secular, are varied and picturesque; especially that of the begging friars, who are, however, seen all over Italy and Spain, and are not peculiar to Malta.

A few weeks' residence is manifestly too short an acquaintance with the Maltese to warrant a sketch of their character. But I made diligent inquiry on the point from old residents. There are those who say that the Maltese do not always speak the truth (I am putting the statement my own way); that they have confused notions of property; that they are not so courageous as lions. For myself I am not conscious of having been deceived by any statement of theirs. I certainly lost nothing whilst with them, although I left my things about as I should not have done at an English hotel. Of their courage, or want of it, I could form no opinion. But I am well assured that they are an industrious, sober, thrifty, good-tempered, gay, and eminently moral race, and with these virtues,—which all admit them to possess,—they cannot be very bad. They are extremely courteous, with a native courtesy which has all the charm of the highest breeding. The man who took me over (literally) the Mousta Church was the analogue of the English navvy,—a man who was employed as a labourer on the public drainage works. His wages for a long day were 10d. only. He took me through the church, the sacristies, the priest's house, and obtained for me specially a sight of the architect's original drawings. At parting I slipped 1s. into his hand, which he instantly returned, politely but quite firmly. My friend the *gamin* tried unsuccessfully to snatch it, and came in for a sound cuff. But my guide could not hear of being paid for a civility which he was only too willing to render. It was *kind* of *me*, he said, to take the trouble to examine the church, of which he was evidently so proud. I have looked over a good many churches in my time, English and Continental, but I never knew the guardian of any of them take this view. It is to be remembered that the gratuity which this poor man resolutely refused was more than a day's pay.

I have, on the whole, the very pleasantest remembrances of the island and its inhabitants. It has been strangely neglected by painters, who would find there thousands of pictures waiting to be painted. To the young architect it affords a wide field for discriminating study. It is, moreover, a place where hospitality is universal, and where an Englishman can enjoy the sights and sounds of a foreign clime, and yet feel himself completely at home.

British Archæological Association.—At the meeting of this Association on the 18th inst., the Rev. S. M. Mayhew presided, and exhibited a large collection of ancient objects, mostly found in the City in some of the recent excavations. The first paper was by the Rev. John Edkerg, D.D., of Pekin, read in his absence by Mr. W. H. Rylands, F.S.A., on "Ancient Navigation in the Indian Ocean." Mr. J. T. Irvine read a description of the opening of a barrow at Croyland, Lincolnshire, in which were found some Roman remains, and also some prehistoric flint implements. With these were a great many objects of hard-baked clay, similar to the teeth of a harrow, and the opinion was expressed that they had been used for a similar purpose. Similar articles have been found near Peterborough.

NOTES.

THE question of dealing with Westminster Hall will, probably, be submitted to the House before long, and we must beg leave to repeat our caution to those Members who care at all about such subjects not to allow themselves to be coerced into sanctioning a foolish piece of costly archæological trifling merely because the chairman of the "Restoration" Committee is pertinaciously bent on carrying his point (for that is really all there is in it), and those who may presently have to vote on the matter should read the full evidence (when published) and not trust to what has been reported in the *Times*, which has omitted all report of the evidence of some of those who were best qualified of all to speak on the matter, and who were adverse to the views of the chairman. Mr. Brewer's full and valuable evidence as to the probable former state of the site west of the Hall was reduced in that journal to a mere paragraph, and the evidence of Mr. Loftus Brock was omitted altogether. These gentlemen are only architects and men noted for special archæological knowledge, and accordingly their opinion on a point requiring special knowledge of that kind is of course passed over in the leading journal as of no consequence. Our view of the whole matter will be found in the *Builder* of November 29th of last year, and we have seen no reason to alter it. The side of the Hall was never intended to be seen; the finials and huge battlements at present built up entirely dwarf the details of Barry's buildings (more so even than need be, for the buttress finials are very coarsely designed), and the proposed new rooms will be an absurd failure in regard to size and lighting. What should be looked to is the repair and restoration of the buttresses as far as is necessary for stability and architectural completeness, with the view of ultimately completing Barry's building as it was intended to be, and concentrating the Government work in proper apartments, and not pigeon-holing committees in the partitions between the buttresses of the Hall. Those who vote for this will find out when it is too late what a silly thing they have done: and it may be observed that the promoters of the scheme themselves have been obliged to drop their idea of the carriage porch in the lower cloister, which every practical man knew from the first to be absurd.

ON Monday Mr. Causton inquired whether, before the House was asked to decide on the question of the restoration of Westminster Hall, the painted screen in the two central bays might be removed, and the two buttresses finished temporarily in similar style to the pinnacles now exposed to view: in other words, that those interested might have an opportunity of seeing how the buttresses and flying buttresses would look without the screen: a matter which it is certainly worth while to see.

DURING the last week there has been on view at the Horse Guards the design, shown in plans, sepia drawings, and a model, of a projected Military Hospital for a site in a hot climate, designed by Major-General Sir Andrew Clarke and Mr. E. Ingress Bell. The hospital is a circular ward one, each ward having over it an open roof chamber or "Baracca," which constitutes a protection from the sun, and allows the air to circulate freely between this raised or extra roof and the actual roof of the ward. The wards are also raised 7 ft. from the ground by a hollow basement. In times of emergency the capacity of the hospital can be doubled by closing in the arches of the Baracca or roof story, and using the enclosed area for the sick and wounded: so runs the official circular in regard to the scheme, but it seems to us rather questionable whether it would be good sanitary policy thus to take away the advantages of the open and free passage of air between the roofs just when, from the admission of a double number of patients, the utmost sanitary advantages would be called for. It is like saying, "under special circumstances we can take in double the number of patients, by foregoing the most important sanitary advantages of the hospital." The plans will probably be sent to the Academy exhibition, and we may be able to give an illustration of them shortly, when further remarks as to the adaptability of the building to the site will be more intelligible than they can be without the drawings. It may be observed here, however, that Mr. Bell has succeeded in making a very pleasing architectural effect out of the combination of circular wards, which is what cannot always be said of hospital designs.

ON Tuesday Lord Lamington called attention to what he described as the "extraordinary nature" of the Bill entitled "an Act to authorise the Widening of Parliament-street, Charles-street, and Delahay-street; and the Making of a new Street in the Parish of St. Margaret, Westminster, and for other Purposes," which would come before the consideration of the House of Commons. It was a Bill which transferred the whole responsibility of the Government, in regard to most important public buildings, to a private company. Lord Rosebery agreed that it was highly objectionable that this great site and its improvements should be left in the hands of a private company. The Bill was further objectionable inasmuch as it gave powers to a private company for a considerable period, without laying on them any compulsion to use those powers.

THE recent strike at Saltaire is a fact of the gravest importance. Distressing in itself, it is made doubly unhappy by its locality; and yet more menacing from the wage-disturbances which the signal thus given, like that of the fiery cross, is already arousing, from the Valley of the Mersey to that of the Clyde. Already reductions of wages have been announced at several mills in Burnley, Padiham, and Rossendale Valley; and strikes and lock-outs have followed. About 1,800 miners have received notice to leave the Thorncliffe, Tankersley, and Rockingham Collieries in fourteen days. In the Methley district, at Allerton, and at the collieries of the Weardale Coal Company, and of the Frystone Coal Company, notices of a like kind are given, as the alternative of a ten per cent. reduction in wages. The old Silkstone Coal and Iron Company have given twenty-eight days' notice. The coal-masters of the large coal-mining districts of Airdrie and Slamannan have resolved to reduce the wages of colliers sixpence per day. 40,000 men have been discharged from the South and West Yorkshire collieries. Two thousand men have left work in South Staffordshire and East Worcestershire, where it is said that wages have been reduced by from 10 to 40 per cent., or below the rate needed to support life, through underselling in the foreign trade. The colliers employed at the Barnsley pits, more than 3,000 in number, those of the Alloft Colliery, and those of the Middleton Coal Company at Leeds, have received notices of a ten per cent. reduction, and the reduction of miners' wages is becoming general throughout Scotland. Glassmakers, miners, colliers, tailors, moulders, ironworkers, and many other trades have sent representatives to a meeting at Brierley Hill, South Staffordshire, which resolved to form a "federation of labour." The wages of jute-workers at Stratford have been reduced 15 per cent.

THE case of Chester *v.* Powell, which came before Vice-Chancellor Bacon last week, will be a warning to tenants not rashly to attempt to get rid of houses on the ground of a misrepresentation by the lessor. The house in question was on the well-known Hog's Back, and was supplied by water from rain-water tanks. The water during the tenancy ran short, and the tenant then refused to continue the tenancy, and so the lessor brought an action for specific performance. The defence was that there had been a false representation, namely, that the supply of water was sufficient, whereas, in fact, it was insufficient for the

wants of the household. It was proved, however, that during the lessor's occupation the supply had been sufficient, and that during that of the lessee the pipes had been stopped by leaves, and that, in fact, there had only been a very slight want of water. It was obvious that this was no real defence. People who take houses on places like the Hog's Back cannot expect as much water as if they lived in a valley. While tenants who with good cause bring landlords to book in respect of sanitary or other matters, have our sympathy, the landlord who is brought into court by an unreasonable tenant should not be left unpitied, for the lot of a successful litigant is not a bed of roses when the lawyer's bill is presented.

THE discussion last week in the House of Lords, on Lord Thurlow's motion to support the Trustees of the British Museum in their half-formulated project of opening the Natural History Museum on Sundays, resulted in a tie in the voting,—sixty-four on each side; which, in accordance with a wholesome conservative tradition of the Upper House, *semper presumitur pro negante*, amounted practically to the adoption of Lord Shaftesbury's amendment, which recommended the opening of the national collections in the week-day evenings by electric light, but not on Sundays. Lord Shaftesbury based his recommendation on the fact that the South Kensington Museum had been open at night for twenty-eight years, with an evening attendance of 6,885,722 persons, and the Bethnal Green Museum for twelve years, with an evening attendance of 3,507,278 persons; that the British Museum reading-room had for some time extended its hours by the use of electric light, and that the Trustees had obtained estimates for lighting the whole Museum with electricity. There is unquestionably much force in these facts. They tend to indicate that as far as putting such institutions within the reach of the classes who are tied to daily hours of labour, the evening opening is sufficient. It is also by no means satisfactorily proved that the majority of the better set of the working class really wish for the Sunday opening of museums. Mr. Broadhurst, their best representative in Parliament, affirms that they do not. On the other hand, it is certain that on Sundays, when the weather is inclement, there is a great want of indoor resource for those who do not wish to remain in their houses all day; and the speakers on Lord Shaftesbury's side of the question forget that their objection, that Sunday opening involves extra labour for officials, applies even more strongly to evening opening six days in the week. As the question at present stands, however, we are inclined to believe it would be best to work for the evening opening of the museums first (now that the electric light gives additional facilities for it), and defer the Sunday question for the present. The former proceeding would be an absolute boon, which would give offence to no one; the latter would inevitably offend the feelings of many, and might not prove such an unmixed benefit as is supposed.

IT appears that in consequence of the expenditure of 70,000*l.* on the Blenheim pictures, the annual grant for the National Gallery is to be withdrawn for the present, being supposed to be commuted by this special advance for a special purpose. We were under the impression that the Government had for once done a liberal thing in regard to art, but it seems it is only taken out of one pocket to put into another. It is true that the promise has been made on the part of the Government that any special opportunity of purchasing valuable works should be duly taken into consideration; but the position taken up will certainly throw great difficulties in the way of the National Gallery in the future acquirement of pictures, and form a kind of precedent for drawing the purse-strings tighter in regard to objects about which we are parsimonious enough at present, in all conscience.

THE scheme for a British Hospital at Port Said, in memory of Gordon, seems likely to come into practical shape; and it is satisfactory to note the determination of the committee that as the hospital is to be a permanent memorial, it shall be constructed in the best possible form, and with the best sanitary arrangements. A Building Committee has been appointed to consider fully this portion of the subject, and to take professional advice thereon. That there should be a first-class British Hospital at Port Said is, of course, a desirable object in itself, and the memorial is suitable enough in spirit so far as it goes, though it seems strangely inadequate in relation to its object. However, Gordon will need no "piled stones" to keep his memory alive. History will take care of his name.

THE annual report of the Kyrle Society contains an account of what the Society has done during the year 1884 in giving voluntary work in connexion with decoration, music, and the provision of open spaces. Under the decorative branch, mission-halls, parish rooms, and club-rooms in the poorer parts of London have been decorated, as also a ward in the London Hospital, and the Children's Ward in the Poplar Hospital for Accidents. Above the public garden formed from the churchyard of St. John's, Waterloo-road, has been placed in mosaic, along the dull brick wall of the church, George Herbert's noble sentence:—

"All may have,
If they dare try, a glorious life, or grave."

It is characteristic of the truly missionary character of the Society that no names of any designers or executants are mentioned in reference to the art-work, the work being apart from all question of personal credit. Whether it is quite a sound theory to give decoration, in charity, any more than other kinds of assistance, may be a question; but, perhaps the efforts of the Society may serve to create an appreciation of and a demand for artistic embellishment where it does not at present exist, and the voluntary character of the work may be a necessary condition for getting in the thin end of the wedge. In the "Open Spaces Branch" the Society is doing admirable work, and really important to public health. Among other things, the disused burial-ground of St. George's, Bloomsbury, which was "choked with mouldering tombstones and rank vegetation," has been laid out as a public-garden, under the care of the St. Pancras Vestry. The old burial-ground of St. Nicholas, Deptford, has been similarly laid out and transferred to the care of the Greenwich Local Board. The Society appeals for more funds to carry on this good work.

THE fourth Channel Islands' Art and Industrial Exhibition is announced to be held "in Guernsey and Jersey" during April. From the programme sent to us, it appears to run rather more in the direction of amateur work in the less important branches of art. "Crystoleum" pictures and artificial flowers in waxwork, &c., are amongst the things for which prizes are offered, and "shell work" and "leather work." Considering what these branches of art (?) generally amount to, perhaps prizes for *not* doing them would be more in the interests of artistic culture. Professional artists are offered a prize of 2*l.* "for the best painting on china, terra-cotta, canvas, paper, &c.," in the order named. We fear the Channel Islands are rather in a state of artistic as well as geographical isolation.

AT the meeting of the Institute of Architects last week, Mr. John M. Brydon read a protest in favour of three old monuments that are going to pieces, viz.: York Water Gate, Temple Bar, and Old Burlington House colonnade, concluding by moving "that the Council of the Royal Institute of British Architects communicate with the proper authorities, with a view to the preservation of York Water Gate, and the reconstruction on suitable sites of Temple Bar and the colonnade of Old Burlington House." The motion was supported by Mr. Eastlake and Mr. Phené Spiers, and partially opposed, rather to the surprise of many members, by Mr. Hebb, who objected that the two prostrate structures, if re-edified, would have to be partially restored, and would not be genuine. Does Mr. Hebb prefer to let them rot away on the ground? Of course, there is a distinction between the case of York Gate which is still standing and only requires keeping in repair; and structures which are actually pulled down. But we reply that those structures are of great historic interest (Temple Bar especially), and very picturesque in themselves, and that their remains are still in sufficient preservation to enable us to set them up again, in the main, as they were; and it is a thousand pities to let them go to ruin. Moreover, the authorities have pledged themselves on both these points. Burlington House colonnade was removed on the distinct understanding that it would be preserved and rebuilt elsewhere; and Temple Bar was a few years since taken down under the same understanding. There is nothing to prevent the intention being carried out in both cases, except miserable parsimony and an indifference to architectural monuments. Mr. Hebb's amendment was not seconded; and, with all good feeling towards Mr. Hebb, we must say we are glad it was not. The original resolution having been carried, we hope the Institute will be able to persuade the official custodians of these interesting architectural remains to take the proper steps for their preservation.

THE CHELSEA VESTRY HALL COMPETITION.

MR. HUNT has presented his report on the drawings for the new Vestry-hall, and at the Vestry meeting on Tuesday night it was proposed, we understand, to conclude the matter at once; but more cautious counsels prevailed, and the drawings have been hung up in a building adjoining the present Vestry-hall for the consideration of members, before finally resolving on the course to be pursued.

The work is in reality an addition to the existing buildings, although the actual hall is to be a new one. The present block of buildings fronting King's-road is to be retained, and a T-shaped block of new building added in the rear, to contain a new Vestry-hall, a smaller hall, committee-room, kitchen and offices, retiring-rooms and a reception-room; the portion immediately adjoining the present buildings to be kept low so as not to interfere with present lights above. The new building will, in the first instance, have a very "back" front on to some very poor and unsightly house property, which Lord Cadogan is anxious to improve away and make a good street as soon as the lease falls in; but as this will not be for sixteen years, the architectural effect, whatever it may be, of the new building, will be very much thrown away for a long time to come.

The Vestry are so anxious to prevent collusion between the less virtuous of the architects and the less virtuous of their own body (for even vestrymen are not immaculate), that the virtuous majority have carried a resolution to cover up all the mottoes and distinguish the designs by numbers. Those recommended by Mr. Hunt for the first, second, and third premiums respectively are Nos. 26, 14, and 18. No. 26 is, as far as plan is concerned, very ineffective; the author's friends may call it "simple," but the simplicity is not quite of the right sort. The new building having to be approached through the old, the management of the connexion is a little test of the power of doing the thing effectively. No. 26 simply has a short passage, with ladies' and gentlemen's retiring-rooms opening out of it, with the doors opposite each other (not one man in twenty in public competitions seems to know how to plan these accessories), and this gives into an open cross corridor absurdly labelled "reception-room," which would really be like receiving people "in the open" instead of in a well-appointed ante-room. The large hall forms the stem of the T, and the small hall and committee-room the arms. A corridor runs up each side of the large hall, giving access to the smaller hall and committee-room, and to the platform entrance, and so far the access to the upper end is good and convenient. Architecturally the exterior is redolent of Queen Anne, and has a ponderous pediment with a round hole in the tympanum and a flourish of foliage under it; an order of pilasters, with a central window and niches in the interspaces; the wings are more simply

treated, with boldly-rusticated windows. The internal architectural treatment of the hall is suitable and effective; a mixture of mullioned windows with pilasters and circular arches. The windows are high up and rather small; the light would be somewhat deficient.

In No. 14 the hall is also placed as the shank of the T, and the committee-room and smaller hall as the arms. The committee-room is placed so as to secure quietness, and cut off from the rest of the internal traffic of the building. The arrangement of the approaches and retiring-rooms is not better planned than in No. 26, except that the reception-room *is* a room, and not a lobby. The design has little to recommend it; the large pyramidal terminations to the principal features are very ugly and commonplace, and the coloured decoration for the interior of the hall is "a caution."

No. 18 is a far superior plan to either of the others in perception of architectural effect. The approach is through a vestibule lighted from a small dome over, and leads to a reception-room similarly lighted. Circular vestibules opening each way from this give access to the large and small halls, which are arranged *en suite* across the top of the T. The author has cleverly arranged these circular vestibules so as to mask the irregularity of angles arising from the want of parallelism in the lines of the site. Unfortunately there is no proper access to the platform at the end of the large hall, the only entrance to it being in the middle of its length. The arrangement of the two halls *en suite* is very effective, but as we understand the intention is to allow for the simultaneous use of these rooms for different purposes, this is practically a drawback; but it must be added that there is no hint as to this in the instructions, which only specify "a secondary hall, which may be used as a supper-room," a phrase which appears to imply that it should be connected with the large room, for large entertainments. The instructions generally are not at all explicit as to the ideas of the promoters in regard to the use of the various rooms. The planning of the approaches in this design is open to practical objections, and the committee-room (opening out of the first vestibule) is hardly retired enough. The whole plan, however, is susceptible of very effective architectural treatment, and the exterior, simple and unpretending though it is, is in better taste than either of the others. With some practical modifications this might be made as convenient as either of the others, and would make a much more pleasing and satisfactory building. The detail elevation of the interior of the hall shows good treatment of the architectural features, requiring only a little toning down in some details. If the small hall were cut off from the larger one, and the platform placed at that end of the larger hall it would be possible to arrange all the approaches satisfactorily, with very little modification, and the plan would then certainly be the best of the three; it would also, however, be the most costly.

A look through the other designs, so far as limited time allowed, did not lead us to suppose that any one of them would be superior, taken all round, to any of the three selected. The choice seemed to lie between Nos. 26 and 18. The first fails in being ineffective and almost absurdly naïve in its planning; the second in attempting a little too much in the way of effect without sufficient consideration of practical working; but it is the work of an abler hand.

No. 21 is a better plan than most, and not ineffective in exterior elevation. No. 24 is well planned, and the internal design of the hall very elegant,—an elaborate Classic treatment. Several of the sets show great pains and elaboration in regard to detail and drawing, among which No. 46 is pre-eminent; but, architecturally, there is very little which can be said to rise above mediocrity.

Tanks for Suakin.—Another instance of quick work in this line may be noted. Mr. John Bellamy, of Millwall, made and fitted the tanks for the *Camel*, the order being placed in his hands on the 16th of February and the work completed, we are informed, to the satisfaction of the Government surveyors, on the 2nd of March. The tanks in the *Camel* were made to fit the vessel, and they were also fitted with strong internal bulkheads and with an elaborate arrangement of valves and pipes.

ROOF COVERINGS.*

You all know that there is a vast difference in the climatic conditions of different countries, and, in fact, of different parts of the same country. In some places the heat is nearly always very great, and rain of rare occurrence, but when it does fall it comes down in torrents, of the force of which we in this country have no conception; in other parts the snowfall in winter is so great that when the snow lies on the roof of a house the weight of it forms a very serious additional strain upon the rafters, &c. Now it is quite clear that it would be a most unwise thing to construct the roofs in the same way in these two districts; if a steep roof were formed in the hot country these torrents of rain would run off the roof with such velocity as to do serious damage; whereas, in cold countries, roofs must be steep in order to prevent too great an accumulation of snow on them. As a general rule, you will find that, starting from the hot countries of the South, the pitch of the roofs increases as you journey northwards. In Italy you have the flat roofs with wide overhanging eaves in order to get a good shadow; in Belgium you have the high-pitched gables which form so picturesque a feature in the Netherlands; and in Scandinavia you frequently get the exceptionally steep roofs of which Hitterdal church is such a striking example. The suitability of a roofing material depends very largely upon the pitch of the roof; tiles, for instance, which would make an excellent cover for roofs of a pitch of 50° being absolutely unsuitable to a roof of 26°. Some materials which were formerly in general use for roofing have now become almost obsolete. Shingles, for example, or shides, are frequently mentioned in old books, and yet they are scarcely ever seen now. These shingles were pieces of wood, measuring about 9 in. by 5 in., and feather-edged, which were laid over a roof very much in the way we now use weather-boarding. Of course such a roof as this was not very lasting, but these materials are still used in the West Indies. You may still see, in various parts of the country, roofs covered with large blocks resembling thin flagstones, and called tile stones, which may be very serviceable as a protection from the weather, but are so exceedingly heavy as to necessitate very strong timbering. In former times different districts of the country had different methods of constructing their roofs, but the facilities of transport are now so great that all local peculiarities are fast disappearing in a dead level of monotony, which may be that of excellence, but which is undoubtedly most uninteresting and hostile to picturesqueness.

The principal roof-coverings now in use are tiles, slates, and metals. Tiles are of very great antiquity, and it is most probable that tiles of baked clay were used in the ordinary houses of ancient Greece, but of course these have all perished. Remains are found, however, of marble tiles which were used on the roofs of the temples. These were large thin slabs turned up at the two sides, rebated at the upper edge for hanging over a horizontal rafter or purlin, and with a notch on the under side of the bottom edge for lapping over a projection on the top edge of the tile immediately below. All the vertical joints were covered up with tiles hollow underneath and saddle-backed at the top, very much like our common slate ridge. As these generally terminated, both at the ridge and the eaves, with ornaments called palmettes, they must have formed a very striking roof-covering.

The earliest Roman buildings were probably covered with wooden shingles, but baked tiles were introduced at a very early period, some say in the time of Pyrrhus, about 300 B.C., and the manufacture was extensively carried on, and a very useful form of tile was finally adopted. These tiles were very similar to the Greek ones, having rims at the sides so that the water was diverted from the vertical joints, over which hollow tiles were laid, themselves overlapping. Another form of Roman tile was made, slightly narrower at bottom than at top, with raised rims on each side, so that the upper tile could be pushed down tightly into the one below it; and here again the vertical joints were always covered with other tiles. The Broomhall tile of the present day is very much like the old Roman tile.

The Romans, you know, were great builders, and nearly all their methods of construction are worthy our attention at the present day, being characterised by great strength and solidity. The all-conquering Romans carried their methods of construction with them, and consequently over the greater part of Europe developments of the Roman tile are found. You will easily understand that hips would present rather a serious difficulty with these flat tiles and their cover tiles, and it is very interesting to notice how the difficulty was surmounted as the builders increased in skill. Sometimes exceedingly heavy and large hip-tiles were used, covering the other tiles on both sides, and the gaps were made good with mortar or cement; and sometimes a very ingenious special form of hip-tile was moulded.

In the Middle Ages some splendid roofing-tiles were made in France, and I suppose there have never been better tiles made anywhere than in the old province of Champagne during the thirteenth and fourteenth centuries. These were made with one nib for hanging over the lath and one hole for nailing, the rafters being spaced so as to suit the width of the tiles. These were laid breaking joint, and, in order to ensure that the nail-hole should always be over the back of the rafter,—which would not be the case if the holes and the nibs were in the same position in every tile,—the positions were reversed in each course. Sometimes the exposed portion of the tiles was glazed, and this would certainly render them much more capable of resisting the weather than if they were merely baked, but it must have added considerably to the cost of their manufacture. To show the extreme refinement which was adopted, we find, in many cases, that the upper edge of the exposed portion of the tile was chamfered off, and this would have the effect of reducing the risk of roofs being stripped by a high gale.

The two sorts of tile most used in England are the pantile and the plain tile, both of which are made of clay, purer and stronger than that used for ordinary bricks, and, as tiles are so much thinner, greater care is required in their manufacture. The clay is ground and thoroughly mixed in a pug-mill, and then moulded into the shape of the tile required. The clay is prevented from sticking to the mould by dusting the latter with fine coal-dust or sand. Pantiles are not used except for an inferior class of house or for rough warehouse roofs, as it is difficult to keep them quite watertight for any length of time. The general size of a pantile is from 13½ in. to 14½ in. long by 9 in. to 10½ in. wide, and they usually show from 10 in. to 11 in. on the face when laid. They are laid so as slightly to overlap laterally, but they do not fit close enough to form a watertight joint, and, therefore, when used for dwelling-houses, it is necessary to point them with mortar, which forms a somewhat unsightly joint. They are hung with nibs to fir or oak laths, and as they do not fit very closely at the bottom, a heavy gale of wind is likely to play havoc with a pan-tiled roof. The weight of a square of ordinary pantiles is about 10 cwt. You all know the appearance of pantiles such as are used in this country, but in Germany a simple hollow tile of semicircular section is used, laid alternately with the convex and the concave side uppermost. The Bridgwater tile is very similar to the pantile, but wider, and formed with a double roll.

Plain tiles are oblong in shape, measuring 10½ in. by 6¼ in., and it is a curious fact that the size of plain tiles was expressly fixed by an Act passed in George III.'s reign, at which time heavy duties were levied on their manufacture. They are formed with nibs for hanging on the laths, or with holes for pegs or nails. As there is no lateral lap, it is necessary that each course should overlap the next but one below it, about 2½ in., and the gauge, *i.e.*, the exposed portion of each tile, would thus be 4 in., so that more than half of each tile is covered up. The necessity for this lap causes a tiled roof to be very heavy, 600 being required for a square, and weighing something like a ton. It is somewhat of a moot point whether it is better to hang the tiles to the laths by nibs or by nails. I think I would give the preference to nails, if carefully done. The best plan is to close-board the roof and cover it with felt before laying the tiles. Some builders are fond of bedding the heading-joints in mortar; but I have very grave doubts of the advisability of this

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practice. It makes the roof tighter at first, but my own experience is that tile roofs almost always fail through the laths decaying, and allowing the tiles to slip, and the mortar, in my opinion, accelerates the decay. Certainly, in many old roofs that I have examined, if one part has been laid in mortar, and another not, I have generally found that part where mortar was used in the worse condition. As far as appearance goes I know of nothing to surpass a good, rich, brown Broseley tile; but the great drawback to all tiles is that they are exceedingly porous, some of them absorbing as much as one-seventh of their weight of water in ten minutes, and the dampness caused by this has a tendency to rot the boarding and rafters underneath. A few weeks ago Mr. Ralph Nevill described, at the Royal Institute of British Architects, a plan he had adopted for overcoming this drawback, and it was as follows:—He first laths over the top of the rafters as if for plastering, and then drives rose-nails into the backs of the rafters, standing out about ¾ in.; he then covers everything with a layer of fine concrete or plaster about 1 in. thick. Before this gets quite hard the tiles are laid, and the nails can be pushed into the yielding concrete with the thumb. Of course, only so much concrete must be laid at one time as will allow the tiler to follow on before it sets. The great advantage of this is that you get between the porous tiles and the inside of the roof a hard, perfectly impervious bed of concrete, which must certainly keep the rooms under it much more equable in temperature, as well as drier, than the plan ordinarily adopted. It, of course, increases the weight of the roof considerably, and it appears to me that it must increase the difficulty of executing repairs if tiles get broken, but I can very well believe that the repairs required would be decidedly less than in ordinary roofs, because the tiles have a solid bearing. Plain tiles are often laid on hay in country districts, and country builders are very fond of this method. There is no doubt that this adds to the warmth of the rooms under the roof, but I am afraid the hay would soon decay and become very unsavoury, and I can hardly advise you to adopt this practice. There is one thing that you must remember with all ordinary tiled roofs, and that is the pitch of the roof should never be less than 45 degrees, and 50 degrees is much preferable.

Of late years several attempts have been made to imitate and improve upon the old Roman plan of covering the vertical joints of tiling, and thus diminishing the weight of the roof by doing away with the necessity of so much lap. If tiles are moulded with a lateral lap, so that they will fit into one another and form a water-tight joint, the successive courses need only overlap enough to prevent the rain driving underneath them, and this can also be prevented by forming a groove at the upper edge of one tile, into which a corresponding projection at the lower edge of the next tile would fit. I have here several specimens of this new kind of tile. Price's patent bonding roll tile, the Broomhall patent tile, Phillips's patent lock-jaw roofing tiles, and the Bridgwater patent tile.

The Bridgwater tiles manufactured by Messrs. Major are of two kinds, one with rounded rolls, called Roman tiles, and one with angular corrugations. They are large and beautifully made tiles, formed with a groove at the side, into which a corresponding projection in the next tile fits, and another groove at the top, into which fits a projection at the bottom of the tile next above it: each tile is very heavy, but as it only overlaps its neighbour by about 2 in., nearly the whole surface of the tile is available for a covering, and the weight per square is only 5¾ cwt. These tiles will lie very closely, and the weight of each is such that it is almost impossible for the wind to strip them. Price's patent tiles, supplied by Mr. Matthews, of Weston-super-Mare, have a different kind of lap, and fit into one another very closely. They are made of two colours: one the natural tint of the burned clay, the other coloured by manganese, but a slight rubbing or chipping will soon wear this off. Ninety of these tiles will cover a square of roofing, and will weigh about 7 cwt.

The Broomhall patent tiles closely resemble the old Roman tiles, except that the cover tiles are precisely the same pattern as the under ones, only used with the opposite side uppermost. The under tiles are laid on the battens, about 7 in. apart, and the narrow end of the tile next above is pushed down till the splay of the upper tile fits closely on to the shield of the lower one, giving a 3½ in. lap. These tiles are not nailed, but pegged down by wedge-shaped metal pegs, which keep them in position. When the lower tiles are in position the cover tiles are laid over the intervals between the lower tiles, overlapping the ledges of the latter. The cover tiles are nailed to the battens; 185 tiles will cover a square of 100 ft., and the weight is about 8 cwt.

Perhaps the most perfect form of interlocking tiles yet made are Phillips's patent lock-jaw tiles, which have very closely-fitting grooves and tenons at the sides and at the top and bottom. These tiles are moulded in patterns, arranged so that the rain-water is diverted from the grooved joints, and they fit into one another so closely that no nails are required except in very exposed situations, and they can be easily laid by the most ordinary labourer. Two kinds of this tile are made, the "single grip," of which 150 will cover a square weighing about 5½ cwt.; and the "double grip," of which 170 go to a square, and weigh about 7 cwt.

In all cases the clay for these patent tiles is most carefully prepared and tempered, and they are moulded under great pressure, thus making the clay very dense and diminishing its porosity. The difficulty with all these kinds of tiles appears to me to lie in the necessity of cementing the joints at the hips, no maker as yet having devised an interlocking hip-tile. Ridge tiles and verge boards have been made to suit the tiles, but the hips are in all cases, I believe, cemented.

I do not intend to take upon myself the invidious task of deciding which of these is the best form of tile, but they all have the advantage that you do not require anything like the same thickness of tiles, one above another, that you do with plain tiles, and hence you can very materially reduce the weight of your roof covering, and every one will see the desirability of this if you can insure impermeability.

I now come to what is probably the most extensively used roof-covering at the present day,—slate. You know that tiles are formed of burned clay; but what is slate? Many of you will probably be somewhat astonished when I tell you that slate itself consists of very little else than clay. Ages and ages ago the action of water was depositing in various places layer upon layer of very fine clay or mud, mixed with a little sand, and these layers gradually accumulated to a considerable height; then vast geological changes took place, and this clay became buried deeper and deeper under superincumbent masses of material, and was subjected to enormous pressure and enormous heat, till it became completely consolidated. That is also the way in which most of our building stones have been formed, and the bed of the stone is determined by the direction of the original layers; but in the case of slate, enormous terrestrial forces have acted on it in a lateral direction, and they have been so intense as to rearrange the layers so that they frequently lie in quite a different direction from that in which they were originally deposited. Along the lines of the new layers slate can, as you all know, be split into very thin sheets, and this quality renders it a most useful building material, because although it is very hard and dense, it can be obtained so thin without breaking that the weight of a superficial foot is very small, and, therefore, when used as a roof-covering it does not need a heavy supporting framework. Slate is one of the most compact and close-grained rocks, and has a smooth surface, so that water runs off it very easily, and consequently it can be safely laid on roofs at as low a pitch as 22½°. Curiously enough, it is most probable that its use was brought about by the necessity of finding some close-lying, easily-cut material for covering the high-pitched conical roofs which the Mediæval builders gave to their towers, as they were unable to cut tiles to suit these roofs. Notwithstanding this, its general introduction has acted prejudicially from a picturesque point of view. The quaint old lichen-covered tiled roofs, upon which the eye rests with pleasure in many an old English country town, have given place to the flat, dull, leaden-coloured slated roofs, which frequently seem so ashamed of themselves that they are glad to retire behind a parapet. But this is an age of utility, and though we may spare a word of regret for the picturesqueness of the past, there is no denying the fact that, from the point of view of closeness of fit, strength, and cleanliness, slates are superior to tiles for a dirty, smoky city.

The slates of North Wales are probably surpassed by none in the whole world, and I dare say many of you have visited the celebrated Penrhyn quarries near Bangor, which are situated in the neighbourhood of some of the finest scenery in the British Islands. There are, however, other very good qualities of slates to be obtained besides those of Bangor: Portmadoc slates, for instance, named from the port of shipment, but really obtained from Ffestiniog, Difwys, and other quarries in the neighbourhood. In Cornwall the Delabole quarries are much esteemed, and in the Lake District some excellent specimens of light green slates are found. Ballachulish and Dalbeattie, in Scotland, and Killaloe and Ashford Bridge in Ireland, may be mentioned as the principal places in those countries producing good roofing slates. The characteristics of good slates are that they should be of a blueish-grey tint, uniform in colour, and free from patches; that they should not be tender or friable at the edges; that they should have a good clear ringing sound when gently knocked together; and that they should absorb a very small quantity of water. If the colour be too light the slate will probably be of a stony, gritty texture; if it be a very dark blue you will generally find it absorb water too readily. This quality of absorbing water is, of course, very important, and you can easily test it for yourselves by placing a slate on end in a basin of water with about half its length immersed, and after remaining so for some time you will be able to see how far the dampness which is absorbed has risen in the dry part of the slate. It will not be necessary for me to describe in detail the various kinds of slates used for roofing purposes, such as ladies, countesses, duchesses, &c., as you probably know the names and sizes as well as I do. The kind chiefly used in London are the countess slates, measuring 20 in. by 10 in. It is necessary that slates should be laid so that each course overlaps the next but one below it to a certain extent, and the amount of this overhanging is called the lap. This should never be less than 2 in., and 3 in. is better. There will thus be as in tiles a certain width of slate in each course exposed, and this exposed part is called the gauge, its width diminishing as the lap increases. The way to find what will be the gauge is to deduct the lap from the length of the slate and then halve the remainder; thus, if countess slates are to be laid with a 3 in. lap, the gauge will be $\frac{20-3}{2} = 8\frac{1}{2}$ inches. Each course of slates should, of course, "break joint" with the course below it, and a double course should always be laid at the eaves. The valleys in slated roofs are generally laid with lead, which should be turned up under the slates at least 9 in. on each side, and my own opinion is that lead is the best covering for the hip rafters, but sometimes thick saddle-back slates are used with an ornamental roll, similar to what is used for ridges. As nearly as possible 170 countess slates go to a square of 100 ft., and their weight is about 7 cwt. Slates are laid either on battens, which are slips of wood, about 2½ in. by 1 in., nailed on the backs of the rafters, or to close boarding, which is the best plan, and each slate should be nailed with two copper nails, but they should not be nailed down too tightly or they will be liable to break during a heavy gale of wind. In France the slates are frequently not nailed at all, but secured by clips, the tops of which are secured to the battens, and the bottoms are bent so that the slates rest in them. The consequence is that the slates are free to move, and, although they rattle terribly during a high wind, they are really less liable to be blown off. The reason why slates are broken and blown off a roof during a heavy gale is rather a curious one, and deserves a short consideration. At first sight it would seem that a thoroughly well-slated roof, with each slate carefully nailed, and fitting closely on the one under it, would really offer no purchase for the wind to get under the slates and rip them off. Nor does it, and yet the slates are ripped off, as we see, every time a gale of wind passes over a city. I believe the explanation to be this. Under ordinary circumstances, as you are aware, the pressure of the atmosphere is the same on all sides, and consequently when no wind is blowing the pressure on the inside of a roof is just the same as that outside. But during a gale of wind there are

always exceptionally strong gusts that occur at intervals, and when a particularly fierce gust of wind impinges on a roof it is followed by a momentary vacuum; while this lasts, even though it be for two or three seconds only, the pressure on the inside of an ordinary roof is greater than the pressure on the outside, and the effect will be very much as if a gust of wind were blowing from the inside. Now, whenever any pressure is brought to bear upon any material it finds out the weak points. Just suppose that a gust of wind is blowing on the inside of a roof covered with slates on battens: the slates cannot move when they are nailed, they will resist the pressure then, but at their ends they can easily be forced up, and if they are forced up at their ends while tightly nailed at top they must break, and I really believe that this vacuum which occurs is the cause of the ends of the slates being forced up and the slates broken off. This shows how much safer it is to close-board a roof than to use battens, and it also explains why slates hung on the French system are not so much damaged during a gale. The ease with which slates can be cut to various patterns enables us, if we are disposed to do so, to give endless ornamental patterns to our slating; and in the Middle Ages builders were very fond of working their slates into all sorts of intricate forms, but you must bear in mind that slates when cut into patterns require more lap than when used square.

In cases where roofs are obliged to be constructed at a flat pitch metal coverings should be used, the principal being copper, iron, lead, and zinc. The use of copper for roofs is not very extensive, as it is too costly a material; but where expense is no object, it forms a very durable covering. Sheet copper is formed by heating the metal in a furnace and then subjecting it to pressure between iron rollers. It forms a very light covering, as it may safely be used in sheets not more than $\frac{1}{60}$ of an inch thick, which would weigh about 14 oz. per foot super. Copper slowly oxidises when exposed to the atmosphere; but, as is the case with zinc also, the oxidation is confined to the surface only, and it does not continue to eat into the metal as with iron. Copper has been used as a roof covering far more abroad than in this country; but one large building in London,—the British Museum,—is, I believe, almost entirely roofed with sheet copper. In localities where chemical fumes are abundant, copper should not be used, as it freely combines with most of the acids.

Iron is not a good material for a roof covering, as it is so surely eaten away by the process of oxidation, or, in familiar language, because it rusts very quickly. In order to prevent this, what is called galvanised iron is chiefly used for roofs. The process of galvanising consists in precipitating a thin coating of tin upon sheets of iron by means of weak galvanic action, and then immersing the sheets in a bath of liquid zinc. Thus treated, iron will last for a long while, but when used for roofs, it is almost impossible to avoid nailing it, and where the nail-holes occur, it is practically certain that, sooner or later, water will make its way into the iron core, and this will begin to rust internally, and cause the thin external coating to come off in flakes.

One of the best and most durable coverings for roofs is lead. There are two kinds of lead, called cast lead and milled lead, the latter being formed from the former by passing it through a mill between rollers adjusted so as to give the metal the required thickness, which varies from 0·68 in. to ·238 in., the weight of these two extremes being 4 lb. and 14 lb. per foot super. Cast lead used to be preferred to milled; and even now, if sloping roofs are covered with lead, it will be advisable to use the cast, but for flats and gutters the milled lead should be used. Lead is frequently used too light, and you should never lay a gutter or flat with less than 7 lb. lead; but you may use the lighter qualities for flashings. Lead, in common with other metals, undergoes considerable contraction and expansion with changes in temperature, and consequently it should always be laid so that it is free to move without cracking, soldering and nailing being avoided as far as possible. It is this expansion and contraction that render lead undesirable for covering a sloping roof. During the warmth of the day it will expand, and during the night it will contract, but owing to the action of gravity it will expand downwards more than upwards, and consequently it will creep down the roof. Professor Tyndall stated that on the roof of Bristol Cathedral the lead crawled down 18 in. in two years.

Milled lead is generally made in sheets, about 7 ft. wide and 25 ft. long, so that if you have to cover a large flat you must have lateral joints, and as the expansion and contraction are considerable, it would be unwise to lay it in sheets of the full length. The proper way of forming the lateral joints is to nail fillets of wood on the flat boarding. These should be about 2½ in. by 2 in., rounded at the top in order to avoid sharp angles, which would crack the lead. This should be dressed close up to and half way at least over the roll, while the next sheet is brought up to the other side of the roll and lapped completely over it and the turned up portion of the first sheet. If the lead is closely hammered down with wooden mallets no nailing is required. When a cesspool is required in a gutter or flat, it is a very common thing to cut the sheet of lead into small pieces to fit the sides of the cesspool and to solder the joints, but this is a bad plan, and you should always form your cesspools out of single sheets of lead, bossed up, as it is called, without solder. In some positions, as, for instance, round skylights, nails are required, and these should always be of copper. It has been frequently remarked that lead is not now supplied of such good and durable quality as used to be the case, and Professor Frankland has made some important investigations on this subject, and curiously enough has arrived at the conclusion that it is because it is purer than it used to be. Lead always used to contain a considerable quantity of silver and arsenic, but the modern methods of extracting the silver are so much more perfect than they used to be, that there is now very little silver in the lead supplied to the London market, and this is the cause of its wearing out quicker. Another reason is probably to be found in the fact that we now use timber much less seasoned than it used to be. Oak, for instance, if not free from sap, contains pyroligneous acid, and this has a strong affinity for lead, which will be affected by it even if not in actual contact. Very minute holes are found in lead that has been laid on timber for some time, and these are formed by the tiny larvæ of an insect called *Callidium bajulum*, which is nourished in wood, and has been known to make its way out by eating through sheets of lead one-sixth of an inch thick. It is important that the boarding on which lead is laid should be quite close, and, in fact, for good work it should be grooved and tongued. If you were to take up some sheets of lead that had been laid for some time over a hall like this, for instance, where gas is frequently burning, and large assemblies are held, you would be very likely to find, if the joints of the boarding were not close, that along those joints the lead had decayed and been turned into white lead on the underside, not on the top. This is caused by the fact that although moist air quickly tarnishes the bright surface of the metal, and forms a thin film of oxide, it does very little more than this by itself; but if a very small quantity of carbonic acid be present (and this, you know, is always given off from living persons, and also from the combustion of coal gas), the oxidation and decomposition proceed much more rapidly. You must not, therefore, imagine that any roughly-laid boarding will do for lead if you want it to last.

I now come to the last metal covering of which I have to speak, zinc. This metal, as many of you are aware, had for a long time a very bad reputation, partly deserved, because the early samples of zinc which were used in this country were much too thin and of inferior quality, and partly undeserved, because the men who laid the zinc did not know the proper way to use it. It has, however, been very extensively used on the Continent, and during the last fifteen years the consumption in England has enormously increased. This is largely owing to the enterprise of the Vieille Montagne Company, of Belgium, who supply the metal in a very pure state, and who, by means of their agents, have laid down the principles according to which it should be laid. Zinc should be absolutely pure, as it will very soon decay if it contains only a small percentage of iron. It is a very light covering, the No. 16 gauge, which is the thickest that, under ordinary circumstances, need be used, weighing only 24 oz. per square foot; a very material difference this from lead weighing 7 lb. per foot super. Its expansion and contraction are greater than that of any other metal, and hence it is of the most essential importance that it should be laid perfectly free and unconfined, every place where solder has to be used being an element of weakness. Zinc can be laid in what is termed the Italian corrugated pattern without boarding, but this plan can only be recommended for sheds and such-like places, but, if properly laid on boards, it forms a covering scarcely inferior to lead. Messrs. Braby & Co. have been kind enough to send me some models showing the proper way of laying zinc. The boarding should be even and close-jointed, and upon this wood rolls should be laid 2 ft. 10½ in. from centre to centre, and under the wood rolls, and kept down by them, are placed at intervals of about 3 ft. zinc clips, which are dressed closely against the sides of the roll, and are then turned over, forming a fold which clips the sheet of zinc, which is turned up under it. Over the top of the roll is closely dressed down a zinc cap, which is secured of small pointed pieces of zinc, which slip in under the hooked portion of the clip. This is the method of forming the lateral junctions between the sheets. The longitudinal junctions may be formed in two ways. If the roof has a slight fall clips can be nailed on the boarding, and the zinc need only be dressed over and under these; but for a flat or gutter drips are required arranged in much the same way as for lead. It was formerly the practice to solder the zinc at the top and bottom of the rolls, but Messrs. Braby have recently contrived to fold over the zinc, so that solid unsoldered stopped ends and ridge-plates can be formed, and this is a very great improvement.

Very ornamental roofs can be formed with zinc tiles cast to a pattern, and the large Mansards at the Grand Hotel, Charing-cross, with the cresting, finials, lunettes, and everything, are formed of zinc. Of course these zinc tiles must be nailed, and the original plan was to punch a hole in the zinc through which the nail was driven, but the punched hole, of course, made a depression in which the water accumulated, and now the hole is punched from the underside, and a small convex boss is formed, in the centre of which the nail is driven, and the water is thus thrown off from the nail-hole. These zinc tiles can only be laid at a very steep pitch.

I have now described the principal roof coverings in general use. There are others, such as thatch, asphalted felt, Dachpappe, a material much used in Germany, and consisting in the main of brown paper, and various others, but these are only used in exceptional circumstances.

THE SELECTION AND PRESERVATION OF BUILDING STONES.

IN the course of the discussion which followed the reading of Mr. John Slater's paper* on "Building Stones,"

The President (Mr. Cole A. Adams) said that the thanks of the Association were due to Mr. Slater for the practical manner in which he had treated the subject. His hints for the guidance of architects in the selection of stone were particularly useful, and of no less importance were his remarks as to the proper bedding of stone on its natural bed. Insistance on this was familiar enough in specifications, but when it came to be practically applied it was not always possible to see that so important a requirement was fulfilled, for when a stone had been worked by the mason it was often very difficult (especially with certain kinds of stone) to tell which was its natural bed. Some masons, he believed, were in the habit of marking the stones they worked so that they might know afterwards which was the natural bed of the stone. As to the stone used at the Houses of Parliament, there was no doubt that its repair entailed an enormous cost to the country annually, and that this outlay would have been saved by proper care in the selection of the stone at the outset. But there were some who were of opinion that however carefully a stone might be selected and bedded, it was often irreparably damaged and rendered an easy prey to decay by the pernicious practice of "cleaning-down" by the masons,—especially when the building was finished some months, perhaps a few years, after some of the stones had been

* Read before the Architectural Association and printed *in extenso* in the *Builder* (see pp. 367, 429, *ante*).

placed in position. Those who held that opinion contended that each stone should be cleaned as it was placed in position, without any attempt at a general cleaning-down of the whole when the building was finished; for, they argued, when a stone was put into its place soon after it was worked, in the course of nature there was set up a kind of efflorescence on the surface, which in time became hard, and ought never to be disturbed. It was, in fact, an effort of nature for self-protection, and the case-hardening thus set up ought never to be interfered with, for its removal would leave room for the admission of the germs of disease. One mason with whom he (the speaker) had conversed on the subject thought that the dipping of each separate stone after working into a tub of prepared liquid lime was a good preservative. Mr. Slater had spoken of "weathered" stone, but how long after stone was quarried should it be kept before "working"? He could not help thinking that a great deal of the unhappy results in the shape of decaying stonework in recent buildings might have been prevented by proceeding a little more deliberately with the work than the hurry and bustle of the latter half of the nineteenth century allowed. He could not but think that the old builders, if only we went back fifty years, were not so "driven" as were the builders of the present day. In the old days, the erection of a building was not settled upon one week, commenced the next week, and finished a few months afterwards; but care was taken in the selection of the stone and other materials, so that if the work was proceeded with more slowly than was conformable to modern practice, the possibility of a much better result was almost assured. As to the use of linseed oil as a preservative, he presumed that the oil would sink into the pores of the stone, perhaps to the depth of an eighth of an inch or more; but what effect would that have on the face of the stone at some future time? He remembered Mr. Hamo Thornycroft once speaking of the Elgin marbles, and expressing his belief that they had once been decorated with colour, and that the vehicle or medium by which the colour was applied was oil. Mr. Thornycroft remarked that he was led to that conclusion by the fact that the skin of the marble appeared to have flaked off where it was most probable that the colour was applied.

Mr. L. C. Riddett, in moving a vote of thanks to Mr. Slater for his paper, observed that there was no doubt that during the last half-century the question of building stones for use in London had become a very important one; for, owing to the great facilities of transport which now existed, the varieties of stone to be obtained were much more numerous than in the days of Sir Christopher Wren. During the last fifty years many building stones had been tried in London, but nothing better than Portland stone had been discovered; indeed, it might be said that Portland stone was "your only wear" for London. As to Bath stone, he thought the architect who used it in London for external purposes was simply robbing his client. Any particular bed of stone was no doubt something like a brand of cigars,—the stone obtained a certain name and repute so long as the bed held out. When the bed was exhausted the stone from possibly an inferior bed went by the same name, just as the name of a brand of cigars was retained even when the plantations which produced the tobacco from which they were first made had ceased to produce plants of the best quality. With regard to the stone used at the Houses of Parliament, he believed it was a fact that the Commissioners, after a very long inquiry, settled upon and recommended a particular stone, but failed to ascertain whether that stone could be obtained in sufficient quantity for so extensive a series of buildings. Architects were constantly plagued by the receipt of circulars advertising particular kinds of building stone, accompanied by testimonials and analyses given by gentlemen enthusiastic in their praises of the stones in question. There was only one advertisement for stone,—the evidence of its having endured in the buildings in which it had been used. We in London had no local stone, and, therefore, if stone were to be used at all, it must be a question of importation. Before deciding on what stone to import, the architect could only look around him and see what stone had worn the best in our London atmosphere. The evidence always seemed to preponderate in favour of Portland stone. He knew that Gothic men objected to Portland stone because it wore so white and gave a bleached appearance; but, probably, if architects were to design with greater flatness and breadth of effect they would be able to discount that objection. He looked with considerable interest to the effect of the weather during the next twenty years on the New Law Courts,—the first large Gothic building in London in which Portland stone had been used for the exterior; it would be interesting to see whether Mr. Street had taken into account the bleaching of the stone which would occur after a few years. In the selection of building stones, the two problems to solve were the selection of a stone for external use, and the choice of a stone for internal wear, in steps especially. The wear of a stone staircase was so serious that the steps would generally require renewing during the first twenty-five years of a building's existence. He had seen a useful proposal in the drawings of one of the members of the Class of Construction, which consisted in the provision of movable stone treads, allowing of easy renewal. It might not be known to every member of the Association that when the Houses of Parliament were about to be built, Mr. C. H. Smith offered, for 200*l.* or 300*l.* a year, to test every block of stone brought upon the works. Sir Charles Barry asked that this might be done. The Government of the day intimated that they had no objection to Mr. Smith's offer being accepted, but that Sir Charles Barry must pay the expense which would be involved by its acceptance! As every one knew, the Houses of Parliament was a very elaborate building externally, and it was scarcely to be supposed that the masons selected the hardest blocks of stone they could find for the execution of elaborate details. Mr. Slater had referred to the use of linseed oil as a preservative of stone under certain circumstances. He had seen it directed in North Country specifications that the weatherings of all coping-stones, &c., should be painted. He was not sure but that the adoption of such a course would be harmful, for the effect of the top coat of paint would be to shut the damp in, and the result would be, probably, somewhat analogous to the injurious effects which followed from the painting of an oak cill. Twenty years or so ago the minds of stone-inquirers were very much exercised as to the methods of preserving stone, and various patented "solutions" for coating the material *in situ* were put forward, notably Szerelmey's, Ransome's, and the water-glass process. In his opinion, all these things had been found wanting. Most of them had shellac as their basis, and it was only a question of time how long a preservative coating of that kind would last. Probably if stone could be worked in summer and kept unfixed through a winter it would be much better able to withstand the effects of the London atmosphere. The process of "cleaning-down" had, doubtless, much to answer for, and, as the chairman had said, it should either be done as the building was carried up, or left undone. But the process of "cleaning down" was one dear to the heart of the mason, although much of the interest of the building seemed to vanish as the scaffolding was struck. It should not be forgotten that there was a "dry cleaning" as well as a "wet cleaning," and that the former was much less injurious in its effect on the masonry than the latter.

Mr. G. H. Blagrove, in seconding the motion, said that one important and valuable stone was not mentioned in Mr. Slater's paper, viz., Craigleith, which was very hard to work, and the particles which got into the lungs of the masons had a very deadly effect, being so sharp. He had been told that five years' work in such a stone would kill a man. He admitted that implicit faith was not to be placed in advertisements; but other materials than stone were advertised, and though many were advertised, few were chosen. As far as his experience went, Red Mansfield lost its colour after a few years' exposure to the weather. There was a Red Corsehill or Dumfries stone, which was of a darker red and kept its colour better in London, but this stone, he was informed by masons, was more liable to laminate. Yellow Mansfield stone was used in the Temple Bar Memorial, and was hardly distinguishable in colour from the Craigleith stone used in the same work. In stones where the differences of colour were sharply marked, there was, he believed, greater risk of the stone coming to grief than in stones where the alternations of tint were gradual. As to detecting the natural bed of a stone, masons had a good many "dodges." One of them was to look for the mica in sandstones, the face that contained the greatest amount of mica being the bed.

Mr. Leonard Stokes thought that Corsham stone might be made passably durable for external work if it were rubbed to a smooth surface, so that the water might be readily shot off from it. Although, no doubt, there was much to be said for bedding masonry on its natural bed, he had been told by a mason that every piece of masonry that overhung or was "throated" should be "joint-bedded." He thought there was some force in that.

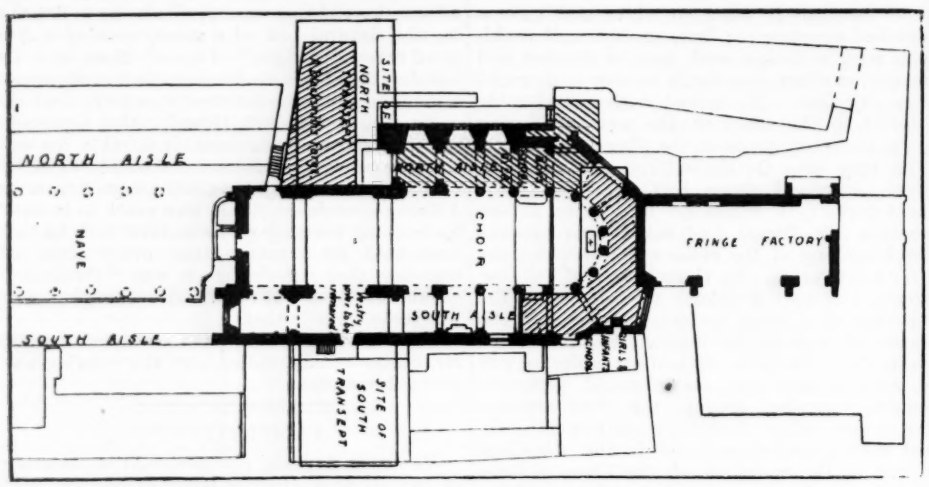
The Chairman having put the vote of thanks, Mr. Slater briefly replied, and the meeting was brought to a close.

COMPETITIONS.

Hartwood Asylum, Glasgow.—At a meeting of the Glasgow District Board of Lunacy, held on the 18th inst., the Chairman (Lord Provost McOnie) moved the adoption of the minutes of meetings of sub-committee on Hartwood Asylum. At a meeting of the sub-committee on 21st January, it was resolved, after discussion, to recommend the selection of ten architects who should be asked to prepare competitive plans, on condition that each of the ten architects who might compete should be paid a premium of 50*l.* sterling; that on payment of the premiums the respective designs should become the absolute property of the District Board; that the District Board should not be held as bound to execute the work according to any of the plans to be obtained; and that the District Board should be at liberty to employ as architect for the buildings either any one of the architects competing or any other party. In answer to an advertisement in the newspapers, it was reported by the clerk at a meeting of the sub-committee on 4th March that eighty-three architects had forwarded their names in response to the advertisement. The conditions of the competition were agreed to. It was suggested by Mr. Laing that a maximum sum should be named to the architect, and he suggested 120,000*l.* After discussion, it was agreed to leave the matter to the architects. The following architects were selected:—Baldie & Tennant; Campbell, Douglas, & Sellar; John Baird; James Thomson; Bruce J. Hay; John Burnet & Son; Francis Stirratt; H. & D. Barclay; Henry Higgins, jun.; Landless & Clifford.

Blackburn.—A limited competition for new schools in connexion with the new Jerusalem Church, Blackburn, the estimated cost not to exceed 1,000*l.*, has been decided in favour of Mr. Robert Nightingale, Town Hall-square, Bolton. Seven architects were invited, no premium except the appointment of architect being offered. Five of the architects competing were from Blackburn.

Edinburgh Architectural Association.—On Saturday last the members of this Association, under the leadership of Mr. Thomas Ross, visited Granton Castle, Royston, and neighbourhood. Mr. Ross, in the course of his remarks, said that in Granton they had a type of buildiug which had been designed to resist attack, perched on the summit of a rocky knoll overlooking the Firth of Forth, with enclosing walls loopholed for guns, and a walk behind for the defenders. Much of this castellated character had, however, disappeared, owing to alterations which had taken place between the years 1544 and 1696. On the other hand, they had in Royston a stately house, built for the reception and entertainment of guests, but with little or no thought of defence; but, like Granton, extremely characteristic of the Scottish architecture of its period, and further interesting from the alteration it underwent in 1696, when its south front was transformed from the homely Scottish style, and of which Royston is one of the earliest and best examples. At Granton they had a building of the familiar L plan, with a circular staircase and entrance at the re-entering angle. The kitchen appears to have been in the north wing, and is now the only vaulted part of the main building. Perhaps the most interesting features of Granton are the surrounding walls, which follow anglewise the outline of its rocky site, and the skilful way in which the entrance has been chosen so as to be enfiladed by a return in the wall at a point where the rock is highest and steepest.



St. Bartholomew-the-Great, West Smithfield.—Plan.

Illustrations.

ST. BARTHOLOMEW-THE-GREAT, WEST SMITHFIELD.

WE noticed in a previous issue the letter which appeared in the *Times* from the Rev. W. Panckridge, rector of this most interesting church, calling attention to its present condition, through the secular encroachments which have been made from time to time, and appealing for funds in order that the opportunity which has presented itself of purchasing these encroaching properties (shown on the accompanying plan) may not slip.

To those who do not know the church it would appear incredible that one of the finest among the very few Mediæval churches remaining in the City of London has had for centuries, and still has, *a fringe manufactory overhanging the sanctuary, and occupying the actual walls of the Lady-chapel; a boys' school occupying the north triforium; and a blacksmith's forge the site of the north transept*, blocking up the great arch of the crossing,—the vestry blocking up the opposite south arch.*

Our view of the east end shows the projection of the manufacturing premises referred to, and our other view shows the northern arcade, with the founder's tomb, erected to the memory of Rahere by Prior Bolton, who carried out considerable alterations to the church from 1506–32; and these two views show the intoresting architectural character of the building.

In 1863 a Restoration Committee was formed by the late rector, the Rev. John Abbiss, and under the advice of the architects, Messrs. T. Hayter Lewis & William Slater, the church was considerably improved,—the floor lowered, the foundations of the four great piers repaired, the building drained and warmed, and many other necessary works carried out, though funds were not then forthcoming to purchase the encroaching properties. The architectural history of this church was published at this time by the Restoration Committee in the shape of an admirable lecture by the late J. H. Parker, C.B. An influential committee is now being formed, and we see by the circular which has been issued that Mr. Aston Webb has negotiated for the refusal of these properties, and from his report appended it appears that the amount required for urgent works, and the acquisition of the properties, will not be less than 20,000*l.*

We can only express a hope that the funds may be obtained and the church freed from these encroachments, which are a constant source of danger from fire, a serious hindrance to the well-attended services, and, we must add, little creditable to the great City of London.

WORKMEN'S DWELLINGS, CARTWRIGHT STREET.

THE block of labourers' dwellings, which we illustrate this week, is situated in Cartwright-street, a street running north and south between Royal Mint-street and Upper East Smithfield, along the eastern side of the Royal Mint.

A large area of unhealthy dwellings was cleared away at this spot by the Metropolitan Board of Works under the Artisans' Dwellings Acts, and, in the early part of this year, the cleared land was put up for sale by auction in lots by the Metropolitan Board, subject to covenants that it should be used for the construction only of workmen's dwellings, naming the minimum number of persons to be housed on each lot and the minimum expenditure to be incurred in building; and one lot, having 372 ft. frontage with a depth of about 60 ft., was bought by the East End Dwellings Company, Limited. The effect of these covenants running with the land has hitherto been to reduce the sums obtained for land so sold to something much below its normal value for ordinary commercial purposes, and also to limit the number of parties likely to become purchasers to a very narrow circle, the speculating builder having as yet hardly seen his way clear to profit in dealing with land hampered by these restrictions. Hitherto, in fact, the building on the "unhealthy areas" cleared under the Artisans' Dwellings Acts have been chiefly erected by the large associations, such as "The Improved Industrial Dwellings Company" or "The Peabody Trust," or, in some cases, as Petticoat-square, by the public authorities in themselves.

From this restriction of competition it has followed that, notwithstanding the great outcry in the early part of last year as to the insufficient number of, and the over-crowding in the dwellings of the town poor, there were large blocks of vacant land, cleared by the public authorities in various parts of London, waiting to receive the buildings which should meet the alleged want. Month after month, nay, year after year, this land continued vacant. The large Associations had their hands full and their capital invested, though the land, cleared at the ratepayers' expense, might be purchased at a price less than its value and far less than its cost to the ratepayers.

This state of things existed and still exists in the Whitechapel district, perhaps to a greater extent than in any other part of London, and attracted the attention of the Rev. S. A. Barnett, the energetic Vicar of St. Jude's, Whitechapel. He saw further that the large public associations have hitherto chiefly provided dwellings for the well-to-do artisan class rather than for the lower grades of the wage-earning class, taking as an axiom that no man with a wife and children should occupy less than two or three rooms at a corresponding rental.

Now the greater number of the day labourers at the East End of London earn upon the average less than 1*l.* a week, though many mouths may have to be fed out of that small wage, and it was for that class that accommodation of a better kind was more urgently required. As a result of much discussion and many meetings of sympathising friends at the house of Mr. Barnett, a company, called The East End Dwellings Company, Limited, was formed with a view to try the experiment of building a block of dwellings for the worst paid class of labourers on some of the vacant land in Whitechapel, and the first act of the new company was to purchase at auction from the Metropolitan Board of Works the site in Cartwright-street, on which the block of buildings we illustrate has since been erected.

The nominal capital of that Company is 100,000*l.*, of which 50,000*l.* was at once issued, and no difficulty was found in obtaining a sufficient number of shareholders.

The directors of the new Company resolved that their building in Cartwright-street should be experimental in character, inasmuch as the greater number of the tenements should be one-roomed tenements so arranged that they might be let as two or three-roomed tenements to those tenants who could afford to pay the extra rental.

Considering the destructive habits to be expected in a certain number of their tenants, they resolved that every part of the building should be of the strongest and simplest character, and with a view to the general arrangement of the building and its details, they took counsel with many who, as owners, rent collectors, or visitors, had obtained considerable knowledge of the habits and requirements of the class for whom the buildings were principally intended.

After much discussion they resolved to adopt the outside balcony plan of access, with short open inlet passages to the groups of rooms; that three open staircases, one at the centre and one at each end, would give sufficient access to the balconies on the upper floors and provide safe egress in the event of fire; that the balconies should be in the rear rather than in the front; that wash-house accommodation should be provided in the large common back-yard or play-ground; and that, as it was impossible, without unduly increasing cost, to give a separate water-closet to each tenement, it would be best to construct groups of latrines (separate for men and women) on each landing of each staircase, these being flushed by automatic flushing tanks acting periodically.

It was also arranged that each landing of each staircase should be furnished with a waste-not tap and sink for drawing water, instead of laying water on separately to each room, so as to reduce the plumber's work to a minimum.

A large room has also to be provided to be used hereafter as a club-room, or for such other purposes as might in the future be found desirable.

The buildings have been planned in accordance with these views by Messrs. Davis & Emanuel, the architects to the company.

Peculiar interest attaches to this block of buildings from the fact that it is, on a moderate scale, an attempt to solve the great problem of the satisfactory housing of the lower working class as a paying speculation rather than as a matter of benevolence, and the working of this company will be watched by many, for it is to a great extent a pioneer company, and if fairly successful may not only extend its own operations, but bring into existence a number of similar undertakings.

Its success or non-success depends on its balance-sheet, and at this moment one side only of that balance-sheet can be defined.

The buildings are sufficiently advanced to enable us to calculate with certainty their cost, and it seems likely that as soon as they are finished tenants will begin to flock in. Assuming, however, that the buildings are rapidly filled, it still remains doubtful how much will have to be deducted from gross rental for outgoings in respect of rates, taxes, and, most of all, repairs, and on this point the success or non-success of the scheme very greatly depends.

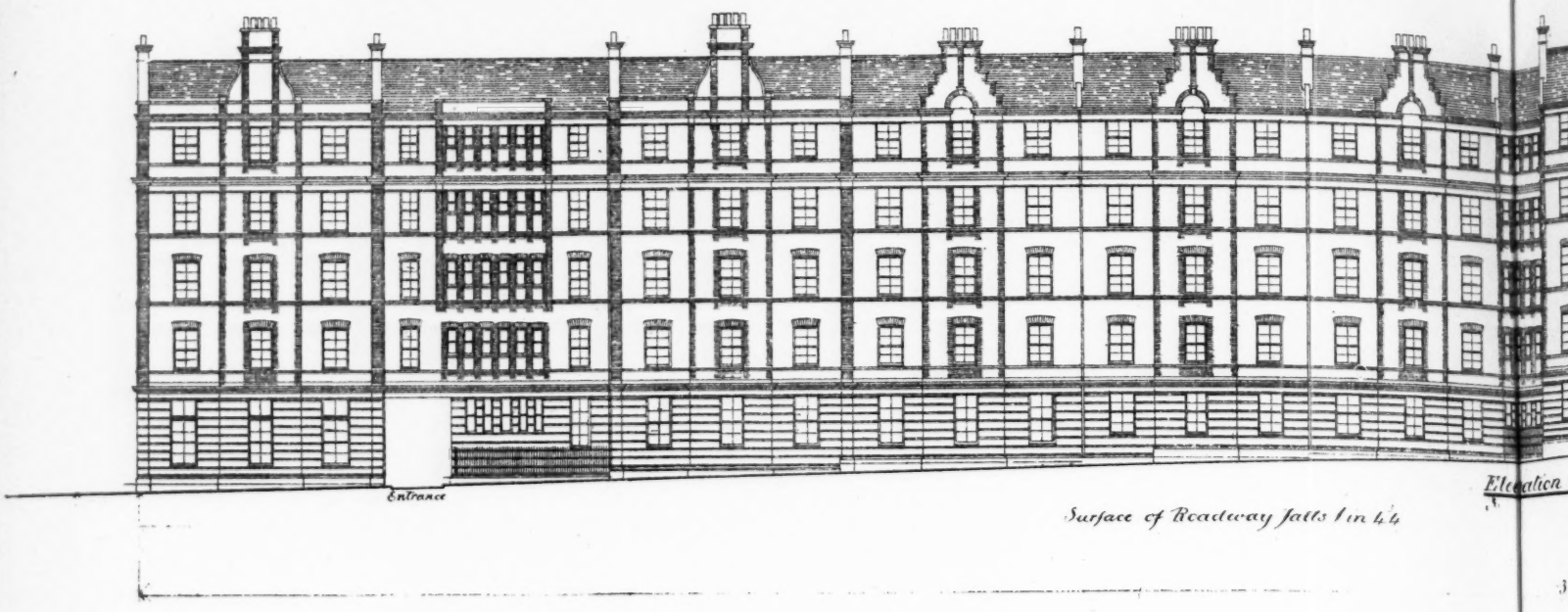
To the general public the most interesting point is the rental per room which the company must charge in order to secure to itself a dividend of five per cent. on its outlay, and a secondary point of interest is the amount of ground-rent which each room will have to bear. Treating this last point first, we may state that the site contains 25,420 ft. super., and was purchased at auction for 3,650*l.* At twenty years' purchase, this means a rent for the ground of slightly under 1¾d. per foot super. Now the building will contain 281 lettable rooms, thus making the ground-rent per room as nearly as possible 13s. 3d. per year, or 3d. per week; this will give some idea how small a proportion of the rack rental per room is represented by the ground-rent per room, and how large a proportion of the rack rental is represented by the interest on building outlay and by rates, taxes, and repairs.

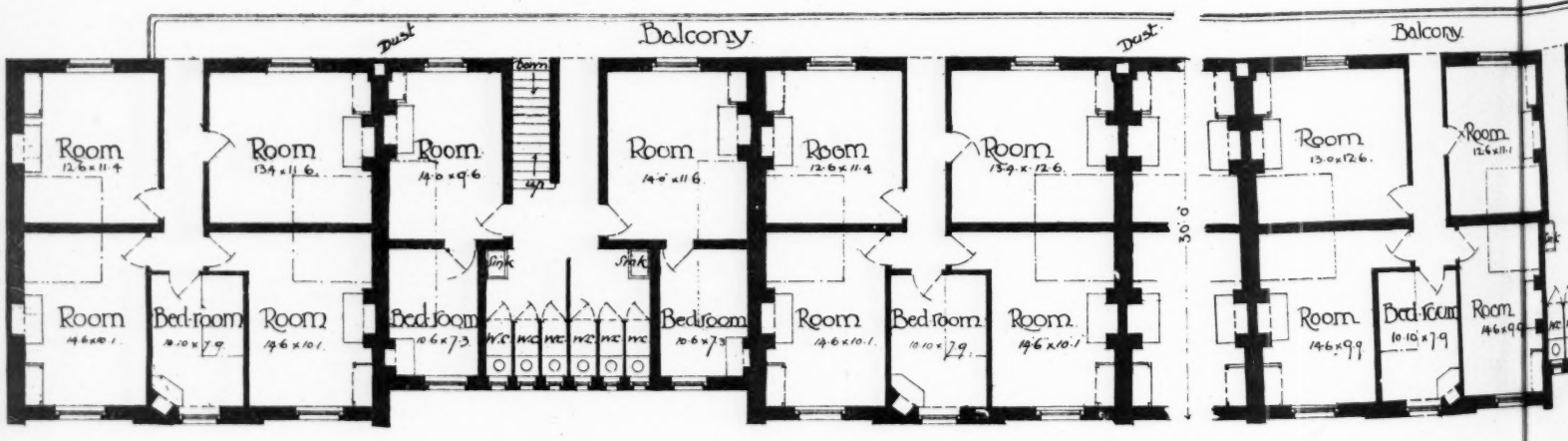
Below is a tabulated statement of the capital expenditure involved in this experimental undertaking:—

Cost of site	£3,650
Levelling site and excavating and concrete foundations	1,318
Building contract let to S. J. Jerrard, of Lewisham	13,793
Probable extras, fittings, and architects' commission, say	1,239
	£20,000

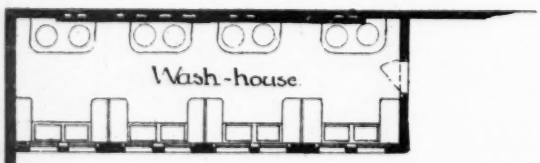
Now, to pay 5 per cent. net interest on

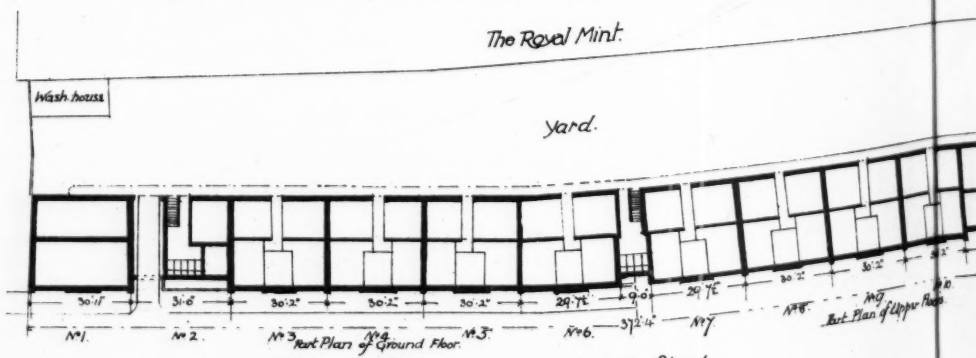
* The portions which are overhung are shaded on the plan.



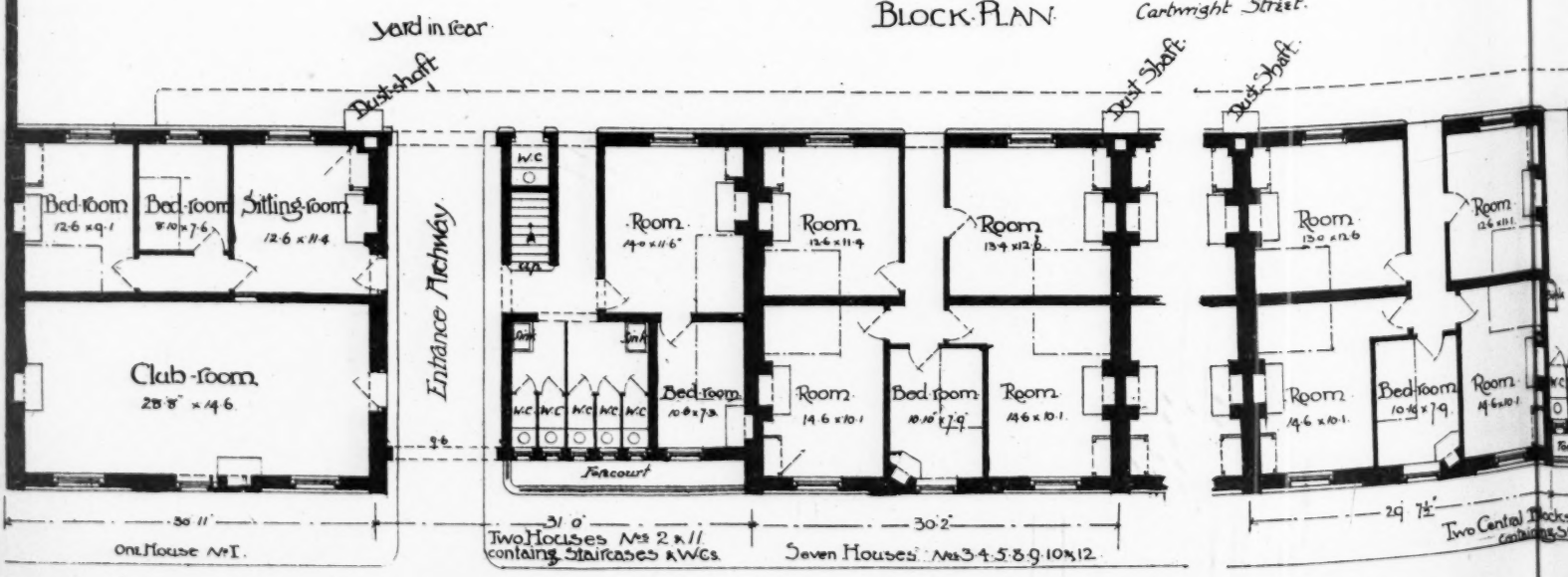


PLAN OF 1ST 2ND 3RD AND 4TH FLOORS



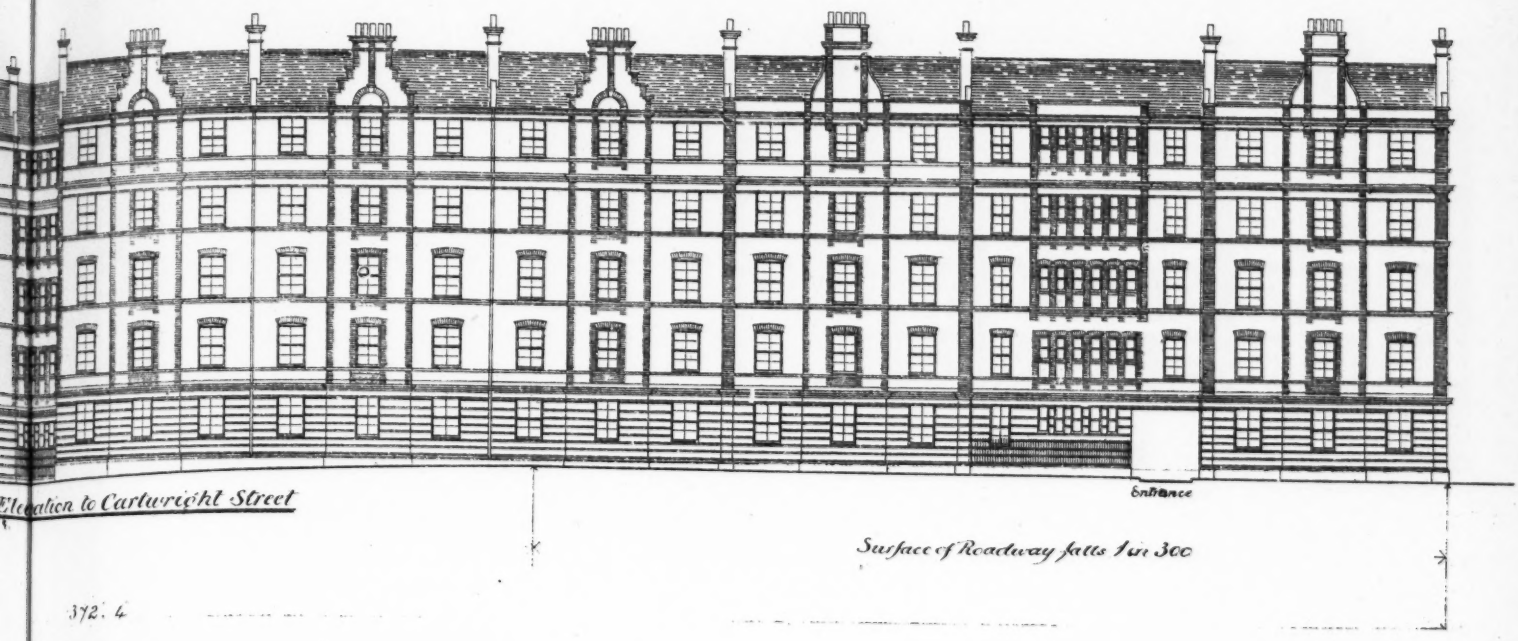


BLOCK PLAN



GROUND PLAN

Wyman & Sons. Photo-Litho

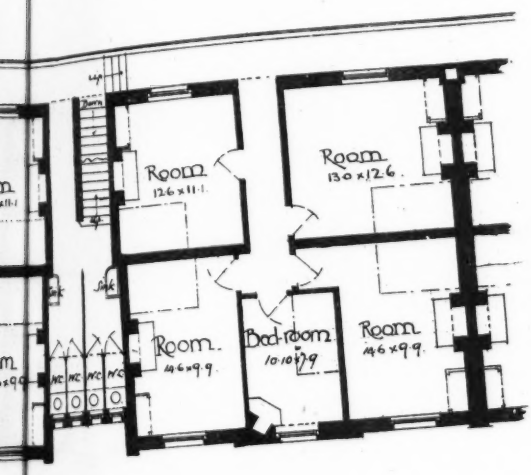


Elevation to Cartwright Street

Entrance

Surface of Roadway falls 1 in 300

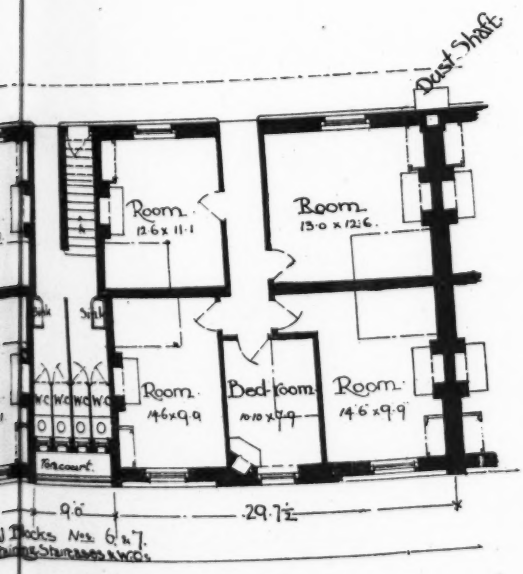
372. 4



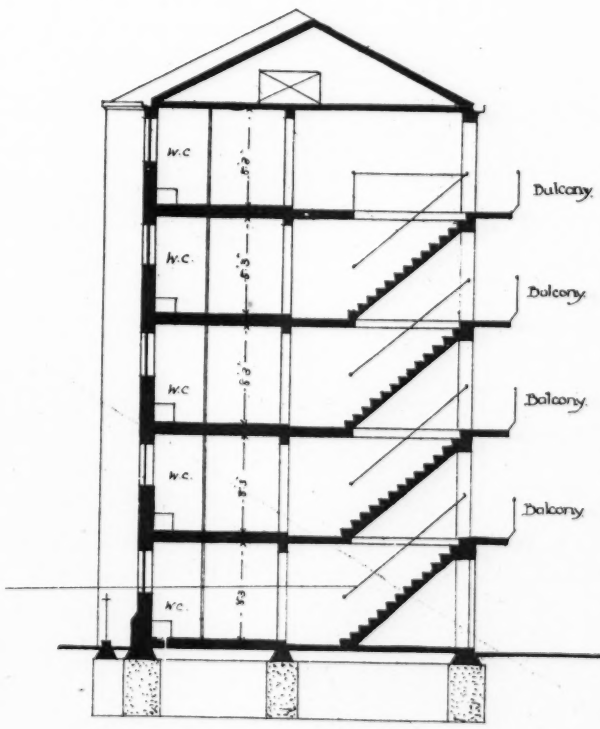
THE EAST-END DWELLINGS COMPANY LIMITED.

LABOURERS' DWELLINGS. CARTWRIGHT STREET ROYAL MINT STREET.

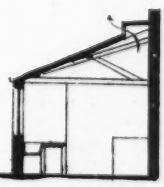
Messrs Davis & Emmanuel Architects.



Blocks Nos 6 & 7.
Staircases & W.C's

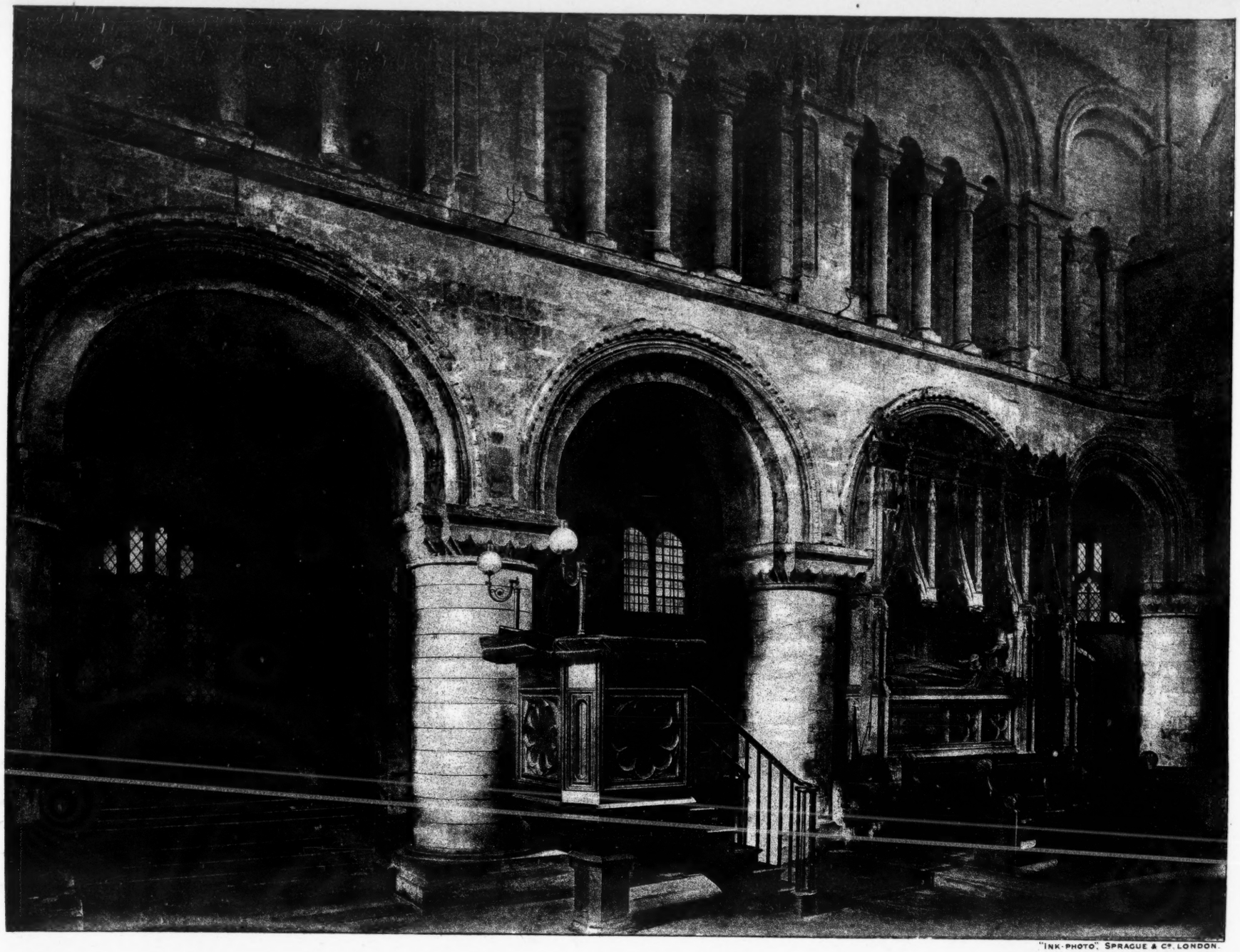


TRANSVERSE SECTION thro' Staircase.



Section thro Washouse.

C^t Queen S^t London. W.C.

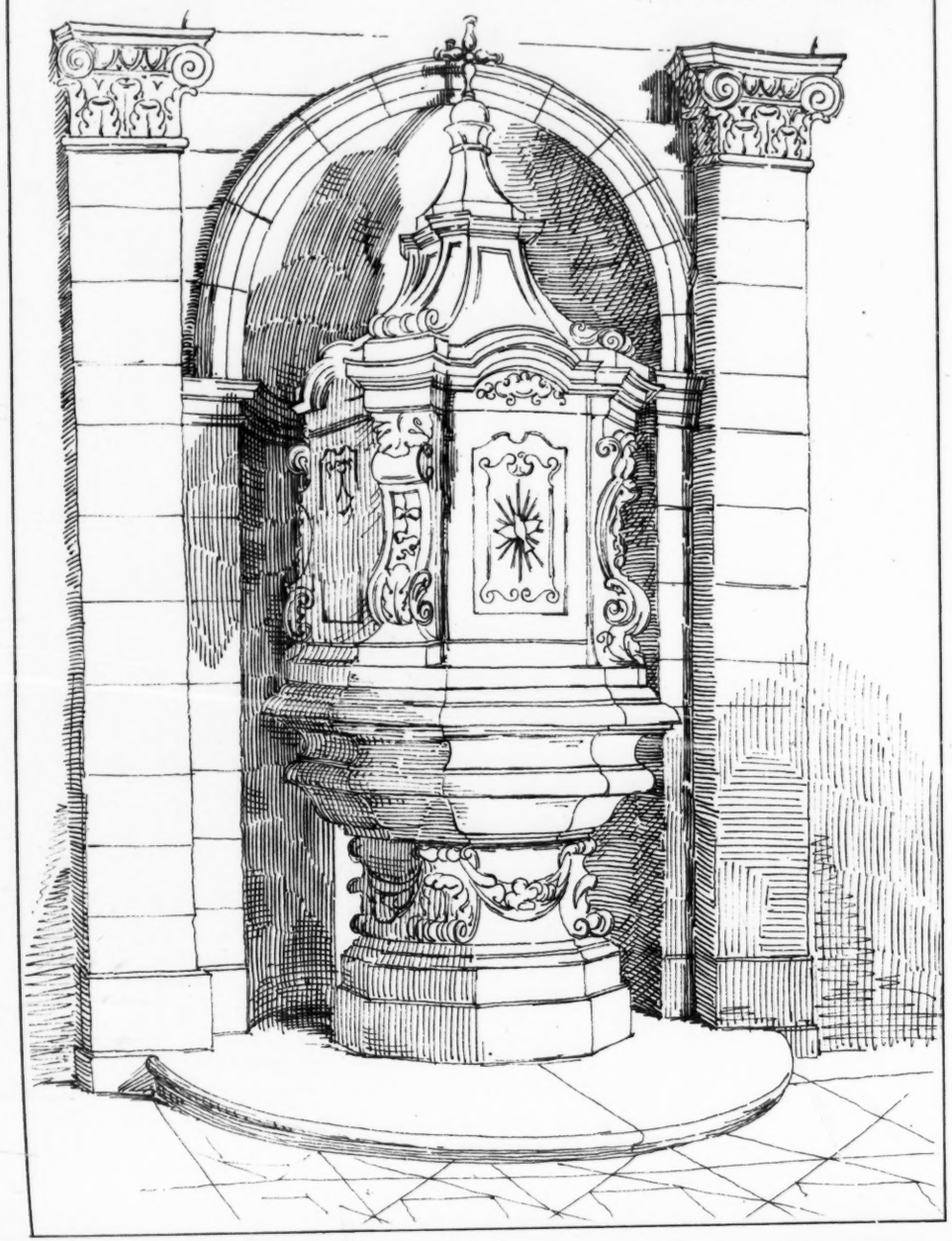


"INK-PHOTO." SPRAGUE & Cº. LONDON.

ST. BARTHOLOMEW THE GREAT, SMITHFIELD.

NORTH AISLE AND ARCADE, OVER WHICH IS A SCHOOL.

FONT, FLORIAN CHURCH.



INTERIOR, FLORIAN CHURCH.

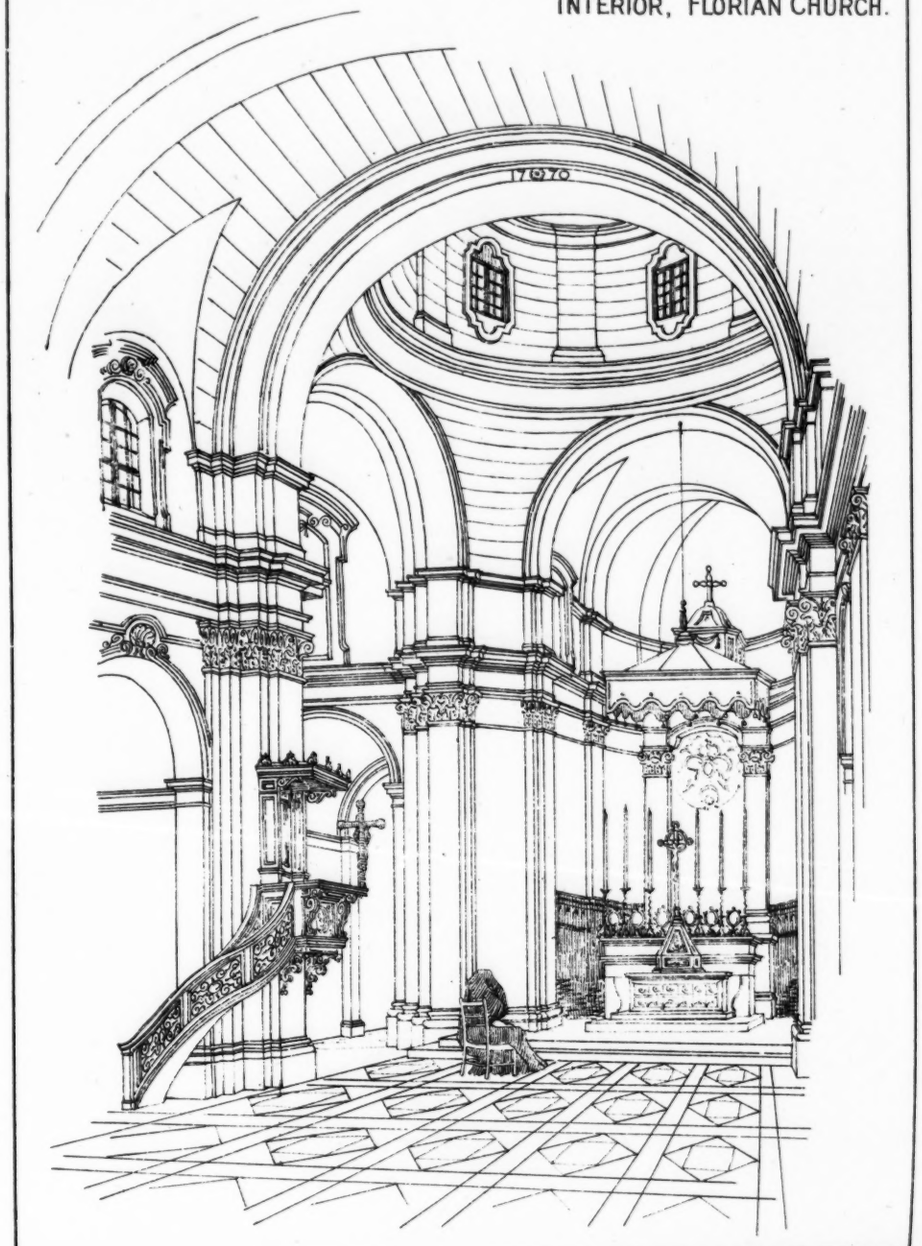
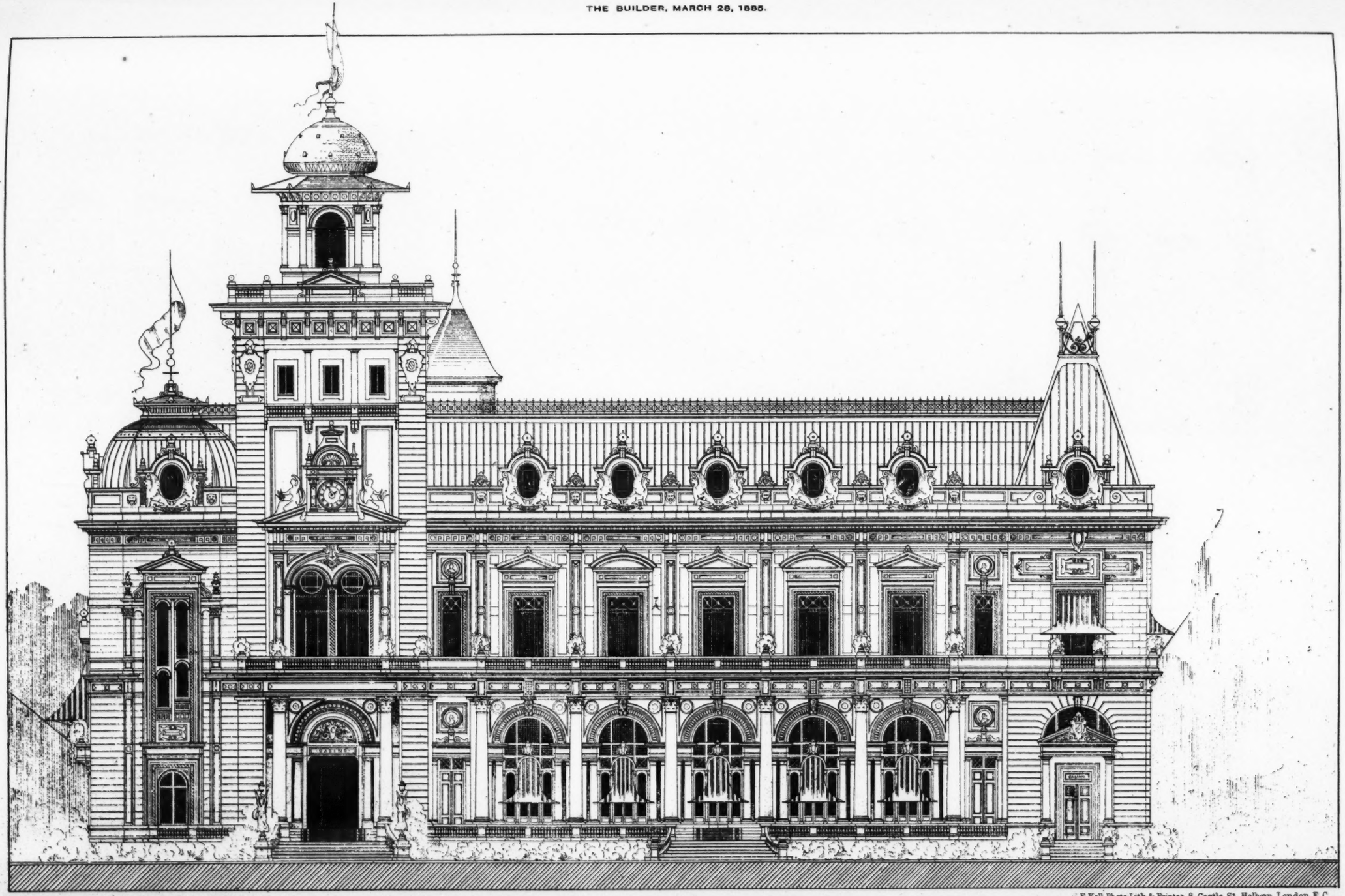


PHOTO-LITHO. SPRAGUE & Co. LONDON.

SKETCHES IN MALTA.

SEE "AN ARCHITECT'S NOTES IN MALTA," BY Mr E. INGRESS BELL.

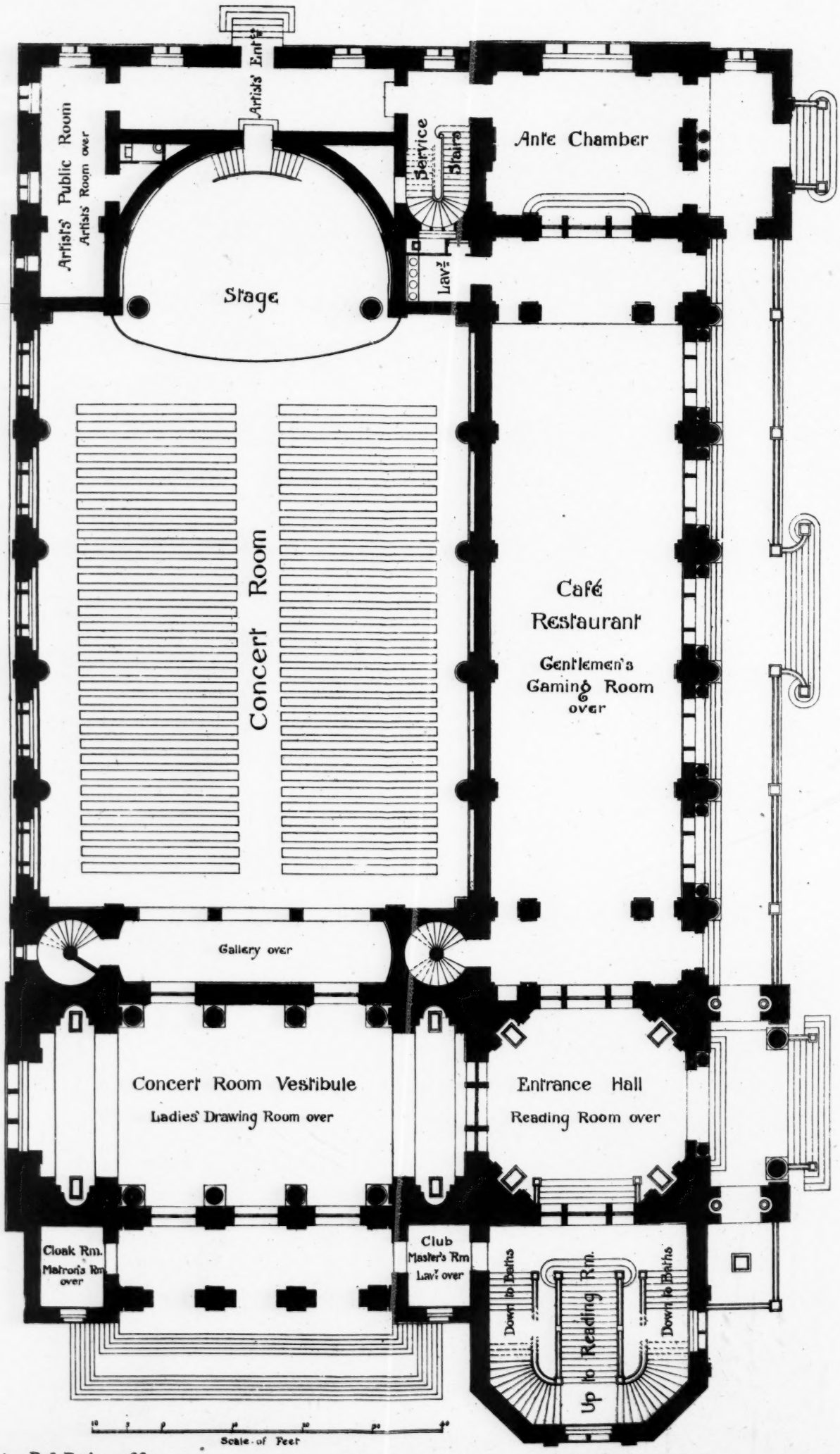


TITE PRIZE, R.J.B.A., 1885.

DESIGN FOR A SEA-SIDE PAVILION. BY MR. J. A. CAMPBELL.

ELEVATION TOWARDS THE SEA.

C.F.Kell Photo-Lith & Printer, 8, Castle St Holborn, London, E.C.

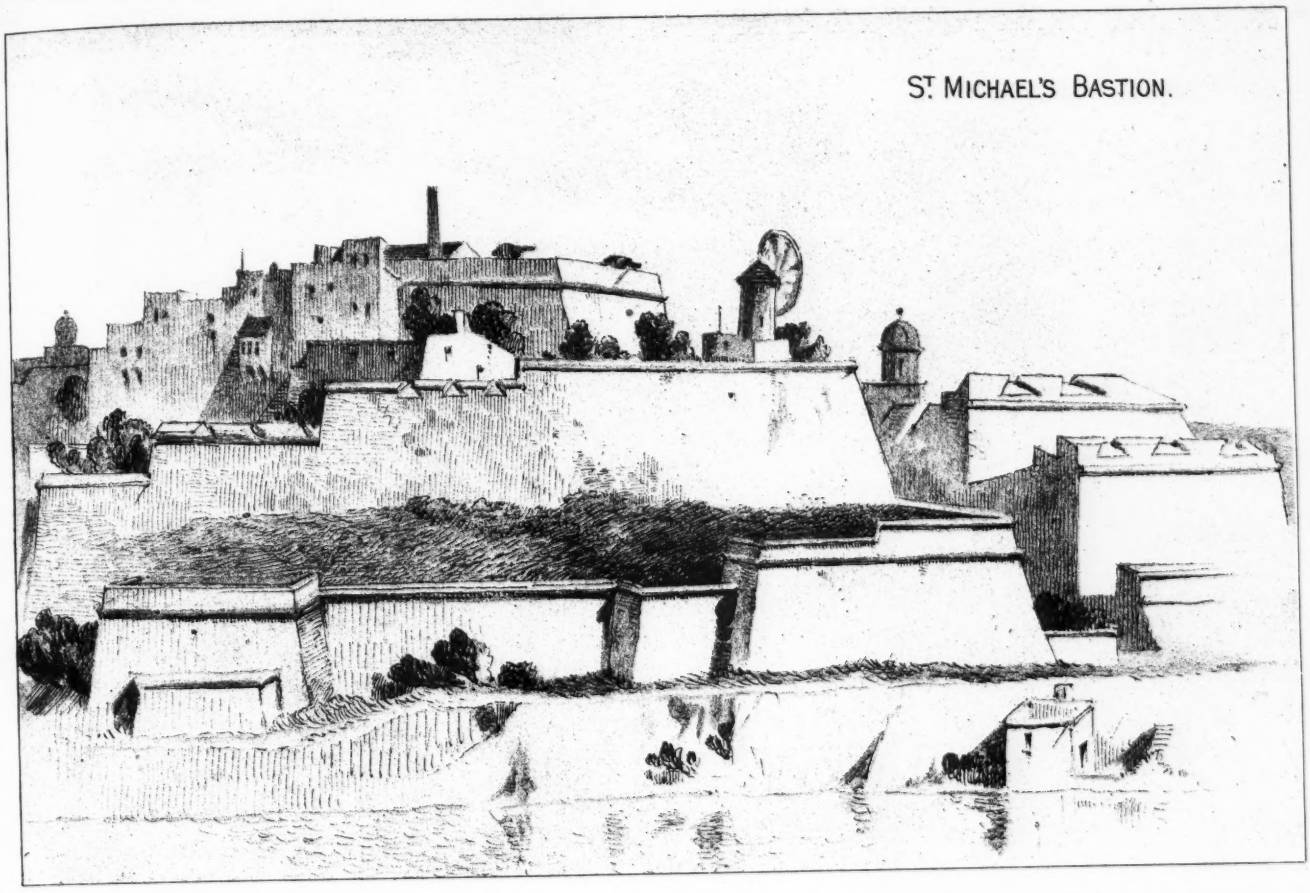


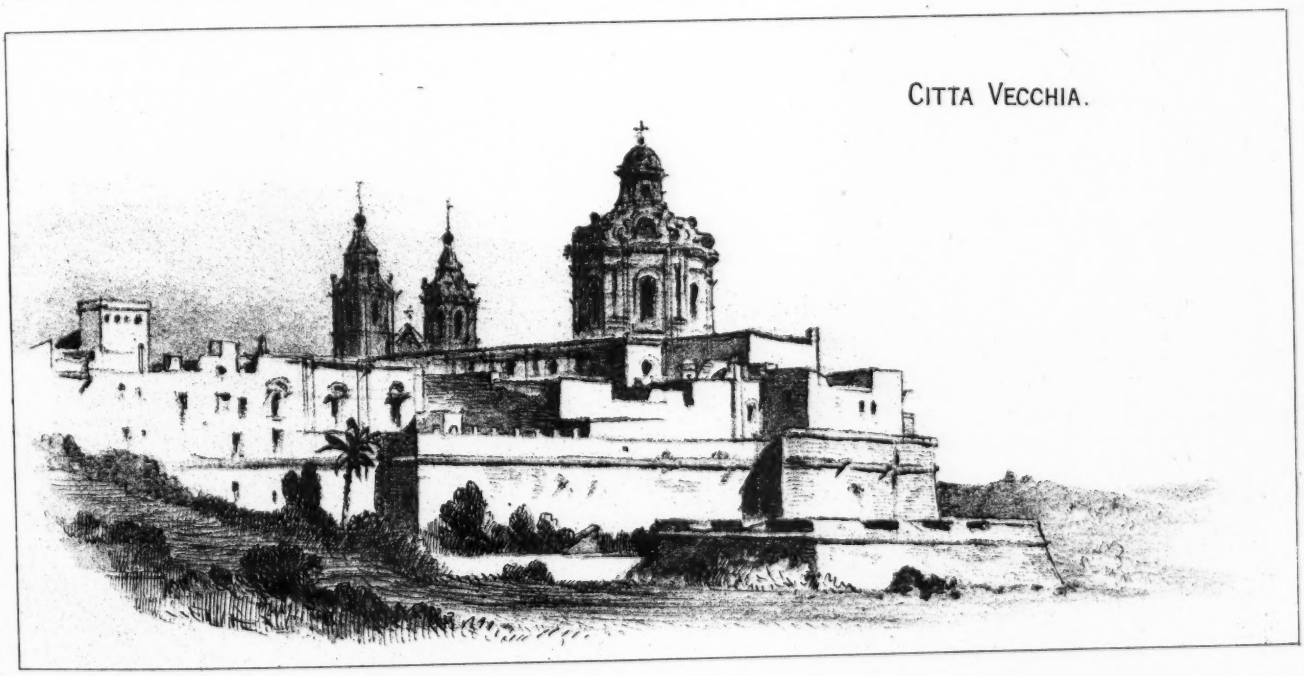
TITE PRIZE, R.J.B.A., 1885.

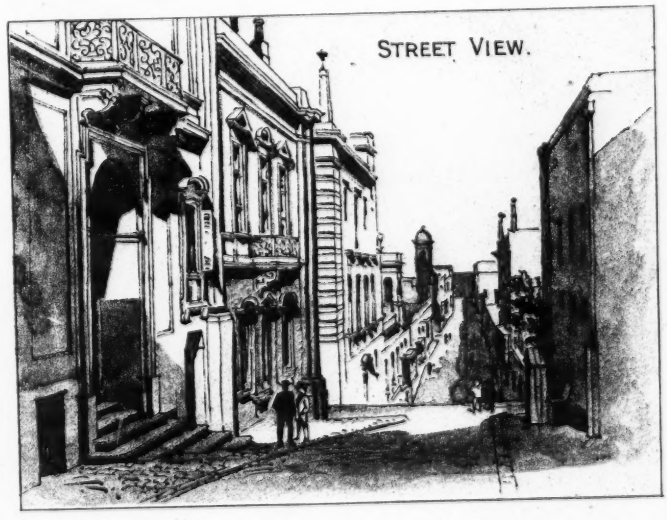
C.F.Wall Photo-Lith. & Printer, 8, Castle St. Holborn, London, E.C.

DESIGN FOR A SEA-SIDE PAVILION. BY MR. J. A. CAMPBELL.

PLAN.







"Ink-Photo", Sprague & Co., London.

Sketches in Malta.

See "An Architect's Notes in Malta," by Mr E. Ingress Bell.

INK-PHOTO, SPRAGUE & Co. LONDON.

ST. BARTHOLOMEW THE GREAT, SMITHFIELD.

INTERIOR LOOKING EAST, SHEWING IRON COLUMNS FOR SUPPORTING FACTORY BUILDING EXTENDING OVER THE APSE.

20,000*l.* capital, the net earnings must be 1,000*l.* a year.

Those who have had experience in the housing of the lower grade of the labouring class say that 50 per cent., viz., one-half of the gross rental, will be absorbed by allowances for unlet rooms and irrecoverable arrears, and by rates, taxes, management expenses, and repairs. Whether this is so, the future balance-sheets of this company will tell. If it be true, *then the gross annual rental* obtained from this building must be 2,000*l.* We have already said there are in it 281 lettable rooms, and this will necessitate an average annual rental of 7*l.* 4s. per room, viz., as nearly as possible an average rental of 2s. 9d. per room per week, to be charged to the tenants. The lowest rent for a single room in the building will be 1s. 9d., the highest 3s. 3d.

Another item of public interest is the cost per room in this building. The total building outlay, exclusive of land, is likely to be about 16,350*l.*; now, adding to the lettable rooms an allowance for the caretaker's room and the club-room, the building may be said to contain 285 rooms, viz., about 57*l.* per room, a result which does not compare favourably with the work of the speculative builder in our suburbs. The superior class of work, however, must be held accountable for the cost, and that, no doubt, will keep down the item of repairs in the company's future balance-sheets.

No special expenditure has been incurred in fire-proof floors, but concrete and artificial stone have been used for staircases and landings throughout.

The hearths throughout are without trimmer arches, but formed with concrete in a solid mass from floor to ceiling under. The fireplaces have no chimney-pieces, but have margins of Staffordshire blue brick projecting slightly beyond the general face of the work.

Each of the latrines has a separate outside louvred window in the outer wall, and is well lighted,—the belief of the directors being that where there is darkness there may be filth.

No pains, we are informed, have been spared on the details of this building, and it may be hoped that success will attend the East End Dwellings Company in their interesting experiment.

SKETCHES IN MALTA.

THESE sketches have been made by Mr. E. Ingress Bell in illustration of his article entitled "An Architect's Notes in Malta," for which see p. 438.

"DESIGN FOR A PAVILION FOR A FASHIONABLE WATERING-PLACE."

THE above is the precise wording of the subject set by the Council of the Institute of Architects for the Tite prize, and perhaps the interpolation of the unfortunate word "fashionable" may be taken to justify the rather florid style of the design by Mr. J. A. Campbell, which obtained its author the prize for this year, and which we illustrate in the present number. There is a good deal of clever and elegant detail about it, some of which we will give on a larger scale. The plan is suitable for the purposes of the building, and the whole design is very creditable to its author, although, as we before observed, it does not really represent what Sir William Tite meant to encourage when he endowed a prize for the study of Italian architecture.

Wood-Block Flooring.—Amongst the exhibitors whose goods were not noticed in our account last week of the Building Trades' Exhibition at Islington is Mr. Roger L. Lowe, of Farnworth, who entered the lists too late for the insertion of his name in the catalogue. Mr. Lowe's improvement in wood-block flooring consists in (amongst other things) the fastening of the blocks upon the hard, dry surface of concrete by his patent composition, which effectually secures the blocks to the concrete bed, and at the same time prevents dry rot and dampness. Mr. Lowe contends that the usual method of laying the blocks in cement mortar is wrong, both in theory and practice, as the water in the cement swells the blocks for a time, though afterwards they shrink and become loosened.

ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of the members took place on Friday, the 20th inst., Mr. Cole A. Adams, President, in the chair.

The following new members were elected:—Messrs. Montague Sellin, R. W. Roe, H. D. Wilkinson, W. G. R. Bousfield, Theodore Moore, J. W. Lee, F. E. Haarer, and R. H. Mew.

A letter was read from Mr. Thomas W. Aldwinckle, stating that he would be happy to place 20*l.* at the disposal of the Association for a travelling studentship for this or next year. Mr. Aldwinckle, it was stated, had made a similar offer to the Royal Institute of British Architects for a studentship of 50*l.* A cordial vote of thanks was passed to Mr. Aldwinckle for his handsome offer.

The next visit, it was intimated, would take place on Saturday, the 28th inst., to the Fishmongers' and Merchant Taylors' Halls.

Votes of thanks were passed to Mr. Charles Bell for kindly conducting a party of members over the new Infirmary at Hampstead, and to Messrs. Read for allowing the members to inspect their Bottling Stores at Gospel Oak, as mentioned in our last.

It was announced that the Sketch-Book Prize Committee had awarded the first prize of four guineas to Mr. G. G. Wallace, and the second prize of two guineas to Mr. H. H. Kemp.

Mr. F. C. Penrose, M.A., then delivered a lecture "On Proportion in Architecture, especially as exemplified in the works of the Greeks." Mr. Penrose commenced by stating that press of business had prevented his writing a paper, as he had intended. Proportion in architecture, he said, had two branches; one, and that the more important, might be epitomised as the *fortiter in re*, and the second as the *suaviter in modo*. The first was doubtless the more important, but no perfection had ever been attained unless both were combined. The first point was the due adaptation of a building to the needs for which it was designed,—the adaptation of support to the mass it had to bear. This was absolutely necessary in all good architecture, but, at the same time, it did not entirely produce beautiful results. It was, therefore, necessary to combine with it a certain artistic feeling, difficult to describe, which, whether known or unknown, was combined with rhythmical proportion. A well-educated artist would produce graceful works. He might not think that he had combined elegance with harmonious qualities, but, nevertheless, it would be found in ninety-nine cases out of a hundred that he had done so, consciously or unconsciously. It was not necessary that he should be bound and tied by any scheme of proportion, but at the same time there were methods of proportion which might be used as rules, just in the same way that a clever draughtsman would by the hand produce a straight line, which he could have done much more easily by using a ruler. There were certain rules which might be serviceable in attaining results more readily, and these might be frequently used to simplify and expedite matters, while even to those who had not had a full artistic training they might prove useful. The Greek buildings would be found to illustrate these methods admirably in both respects, and he would consider the way in which Greek architecture was developed. There were two branches in the great Greek family, the Doric and the Ionic. The Dorians had a great deal of communication with the Egyptians, and from them learned the massive style of architecture prevailing on the banks of the Nile. The Ionians, on the other hand, were influenced by the Phœnicians, whose architectural attainments were recognised by Solomon when building his temple. At Athens, above all places, the two branches were combined. In the Peloponnesus and Northern Greece, and especially in the colonies in Italy and Sicily, the Doric almost entirely prevailed, but, although it produced noble results, the elegance of these works was not comparable to those at Athens. There were two kinds of proportion, one the proportion of strength, the masculine; and the other that of elegance, the feminine. This last was well illustrated in the Ionic, and, as Athens contained the characteristics of the styles, he would point out to them the Acropolis and its immediate precincts. Mr. Penrose here described at some length Michaelis's plan of the Acropolis, and then passed on to consider the chief buildings,—the Parthenon, Propylæa, the Erechtheum, and conjoined temples, as exemplified by Mr. Fergusson's plans.* He also exhibited a diagram showing the development of the proportions of the Doric style, and a profile of the architrave from the great temple of Corinth, from which it would be easy to suppose that the entablature went to a great height. He also showed drawings of the entablature of the older and newer Parthenon, the Temple of Theseus, and later examples. These last, he said, seemed to how that the limit of dignity had been passed, and that the Greeks had drifted into a style too flimsy for the spirit of Doric architecture. The style would bear no more attenuation, and, therefore, other styles took its place, because entablatures of that amount of delicacy were suited to the Ionic or Corinthian, which then became the leading styles. One consideration in the matter of proportion was this,—support must not only be provided sufficient for the superstructure, but what, by tradition and custom, people had been led to believe was necessary. If we were now to begin to form ideas of the proportions suitable to trabeated buildings, without any knowledge of what had gone before, we should probably arrive at something very much lighter than the Greeks did. It was, perhaps, fortunate, however, that we had not to do so, as a very large element of surplus strength in the works of nature should be found, and is felt to be necessary. The Greeks, by degrees, gradually refined and refined, until, at last, they refined the Doric in too great a degree, and it was then necessary to give it up. But we have to consider what to do nowadays, to come to a right conclusion in these matters. We ought to know what the ancients did, and not necessarily copy them (indeed, it was almost impossible to do so exactly), but the principles they had elaborated were for all eternity. The best and highest development of the Ionic was the Temple of Erechtheus, where there was excellent proportion between the columns and the entablature. This was solid enough for all purposes, and yet did not weigh too heavily on the columns; but had this entablature been put on Doric columns, it would have seemed a misfit. This temple was not only an example of the fitness of the support to the entablature but would also illustrate the matter of proportion, respecting means to an end, or the fitness of a building for its purpose. The plan was as irregular as that of any Mediæval building, not purposely or strangely influenced by considerations of site, or otherwise. Any Gothic building erected with perfect freedom of site, and with no difficult constraining circumstance, was quite as regular, and never more irregular than the Erechtheum at Athens. There was a necessity to make a feature on the south side of it where it was opposed to the Parthenon, and this was solved by the erection of the exquisite Caryatid portico, the usual columnar structure being unsuitable, as the height did not allow of a pediment. The figures were so placed that they bore strongly on one leg, while the other was eased, and this in every case towards the middle of the portico. The straighter folds of the drapery were thus utilised to produce the general effect of fluted columns, and here was an instance of the proportion of support to superstructure. Wherever the circumstances of the case required freedom and relaxation, the Greeks were as easy as possible, but wherever symmetry was called for they were most rigid, and determined to carry it out with extreme accuracy. It was much the same in nature, where they would find the limbs of animals not balanced in the middle of their bodies, but placed symmetrically one to the other. When the Ionic had run the greater part of its course, the Corinthian order was developed. Mr. Penrose then referred to the traditional origin of the Corinthian capital, and stated that the earliest example was to be found in the Temple of Bassæ, built in the time of Pericles. He also explained a drawing of the Choragic monument of Lysicrates, or lantern of Demosthenes. The capitals of this little circular temple were extremely beautiful, and somewhat of an adaptation of them could be seen in the façade of Exeter Hall. A capital from the Horologium of Andronicus Cyrrhestes, or Tower of the Winds, was next referred to. This was the town clock of Athens, having a sun-dial with eight

* See Mr. Penrose's lecture, at the Royal Academy, on "Greek Architecture," reported in the *Builder* of March 7th, p. 334.

faces on the outside, and containing internally a water-clock. The four porticos of this building had elegant quasi-Corinthian capitals. The Corinthian order became the rule at Rome, whilst here it supplied the order for the enormous Temple of Jupiter Olympius, in the time of Antiochus Epiphanes. The history of the Corinthian Order was well known, and he would now deal with some of the lesser parts of the structures, notably bases and mouldings, and their proportion in the case of light and shade. The Greek mouldings were invariably formed of portions of the conic section; the circle, however, being rarely used. First there was the ellipse; then the parabola, the lines never becoming parallel, though tending towards it; and thirdly the hyperbola, with its advantages of gradation and variety. The Greeks used the ellipse very much for their egg-and-tongue ornaments; the parabola was used for the section of the cornices; while the hyperbola was a favourite curve. The Doric capital had a branch of the hyperbola in it, the curve always becoming straighter and straighter, and the way in which it caught and distributed the light was wonderful. This was the case where the light was strong, but in a paler atmosphere it would not produce one-fourth of this effect. There was also plenty of room for contrasts, because of the strong shadows and exquisite gradations of light. When the Greeks made use of contrasted curves they did not employ such curves as the Romans did, where there were circles butting against one another, but there was either a flat ellipse or parabola, which became straight at the point of contact and then curved out again to the concave figure. (Mr. Penrose here exhibited a table of Greek mouldings, prepared by Professor Donaldson, and which showed that the circle was hardly ever used.) The Greek Ionic volute was a different thing from the Roman one, and Vitruvius gave a rule for producing it by a system of centres and circular arcs. Good Greek examples, however, would not adapt themselves to this rule, and he had been led to try another method for himself. In the Ionic volute there was a hollow in the centre of the eye, which was afterwards filled up with a boss. The meaning of that hollow, he believed, was for placing in it a little instrument which admitted of volutes being easily drawn. The figure was that of the spiral of Archimedes, the unwinding of a string from which gave all the characteristics of the Ionic volute. He had tested the helical or snail-shell curve against the capitals of the Erechtheum and the Propylæa, and found that his view was confirmed. Having spoken of the proportion of fitness, he would refer to rhythmical proportion. The plans of the temples invariably gave true proportions in length and breadth, though others were also found internally. In the case of the Parthenon, all the main proportions of the parts directly opposed horizontally or vertically would be found to compare with one another. Mr. Penrose here explained several tables of proportions.* The Greeks gave to the outlines of their columns extremely delicate curvature, and made use of the hyperbola in doing so, because of its being the only manageable curve. They wished to have a variety of shape between the upper part of the column and the lower. If, therefore, they had employed a portion of the circle the result would have been of the nature of a nine-pin, while by employing the hyperbola it gave a fully-developed sweep at one place, and a perfectly straight line at another. By this means they got great variety, and all this with a departure from the straight line of less than $\frac{3}{4}$ in. in 32 ft.

The Chairman, in opening the discussion, remarked that the leaders of the revival of Greek architecture many years ago were bound by hard-and-fast rules to give chapter and verse for every building they designed, which tended towards a too mechanical feeling. Mr. Penrose, however, had shown that the same freedom ran through the most beautiful specimens of Greek work, as was to be seen in the best examples of Gothic. In the early days of the Gothic revival Pugin demanded that chapter and verse should be given, but as time went on there had been a breaking away from actual copying, and an adoption of breadth and freedom. There had been a drifting into the "Queen Anne" style, and now there was a tendency to return to the Classic. Might they not, therefore, be led from the bad Classic which characterised so much of the Queen Anne work to a study of the pure Greek?

Mr. J. A. Gotch, in proposing a vote of thanks to Mr. Penrose, asked where the measurements were taken from in comparing the length of a temple with its width? A reproduction of the Choragic monument of Lysicrates could be seen forming the steeple to a church in Regent-street.

Mr. G. H. Blagrove seconded the vote of thanks. The curves of the conic section, he added, approximated closely to natural curves. He could imagine, without investigating the matter, that natural curves produced in vegetation would be allied to the catenary curve.

The vote of thanks was then carried by acclamation.

Mr. Penrose, in replying, said that the measurements of the length or breadth of a temple were taken from the point of the upper step. He was not aware whether the Greeks took their pyramidal construction from the Egyptians or not.

* For these see *Builder* of the 14th inst., p. 372.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

THE seventh annual dinner in aid of the funds of this Institution was held on Tuesday evening last in the Venetian Saloon of the Holborn Restaurant, Mr. James Greenwood (J. & J. Greenwood), President, in the chair. About 225 members and friends of the Institution sat down to table. The usual loyal and patriotic toasts having been duly honoured (Captain A. Stuart Harrison, of the First City of London Engineers, responding for "The Reserve Forces"),

The Chairman proposed the toast of the evening, "Prosperity to the Builders' Clerks' Benevolent Institution." He observed that the Institution had now been in existence for nineteen years, and its income had been steadily increasing, the receipts last year amounting to 739*l.* 4s.* There were now fourteen pensioners receiving relief from its funds, the males receiving 25*l.* per annum, and the females 20*l.*, but it was the earnest wish of the Committee to increase these pensions to 30*l.* for the males, and 25*l.* for the females. The Institution had also purchased two presentations to the Orphan Working School at Haverstock-hill, and they were very desircus to purchase a third presentation (the cost of which would be 262*l.* 10s.), without having to sell out any of their Stock. They were very anxious to be able to maintain a third child at the orphanage. In conclusion, Mr. Greenwood appealed to builders' clerks to be mindful of the good old maxim that "God helps those who help themselves," and urged them to subscribe to the Institution in larger numbers than they do at present, not only with the view to make some provision for their own possible necessities in the future, but also in the hope that they may be able to feel the gratification of having done something by their combined efforts to relieve the necessities of those who may be less fortunate than themselves in the battle of life. The toast was very heartily received.

Mr. Howard Colls, a past President of the Institution, proposed "The Architects and Surveyors," coupled with the names of Mr. J. Condy and Mr. Ellis Marsland, architects, and with those of Messrs. Stoner and Leonard for the surveyors. Messrs. Condy, Stoner, and Marsland replied.

The other toasts included "The Builders," proposed by Mr. E. C. Roe and replied to by Mr. T. F. Rider; "The Past Presidents," proposed by Mr. Edwin Brooks, treasurer, and responded to by Mr. Thomas Stirling; "The President," proposed by Mr. Joseph Randall; and "The Visitors," proposed by Mr. W. Scrivener and replied to by Mr. Morgan Ross.

During the evening the secretary (Mr. H. J. Wheatley) announced subscriptions and donations to the amount of nearly 300*l.*

* Further particulars as to the financial position of the Institution will be found in our report of the recent annual meeting. (See *Builder* for Feb. 28 last, p. 320.)

Obituary.—The *Lynn News* announces the death of Mr. William Adams, the senior member of the firm of Adams & Son, Wisbech. The deceased, who was within a few days of seventy-nine years of age, was a native of Wisbech, and was articled with Mr. Swanborough, an architect and surveyor holding a high professional position in the town, and extensively employed by public bodies in those days. For about thirty years the deceased held the offices of Town Chamberlain and Borough Surveyor of Wisbech, but retired from the same some years ago in consequence of his increasing private practice. He was also Engineer to the Nene Navigation Commissioners and the Wisbech Canal Company.

PUBLIC ARCHITECTURAL COMPETITIONS.

WE have been requested to publish the following additional list of forty-nine architects who have signed an agreement, in accordance with the suggestion made in a memorial addressed to the President and Council of the Royal Institute of British Architects, on May 24th, 1880, pledging themselves *not* to take part in any public architectural competitions unless one or more professional assessors of established reputation are appointed to advise the promoters on the relative merits of the designs submitted in competition:—

Allam, E. C.
Ardron, A.
Arnett, F.
Arundell, W. A. T.
Baker, O.
Banks, F.
Bevis, C. W.
Bishop, H G.
Burrows, S. E.
Cowran, R. A. C.
Cotman, T. W.
Davies, P. D. R.
Ferguson, G. W.
Gadd, G. H.
Goddard, R. W.
Harrison, W. H.
Hodgson, H.
Hudson, A. B.
Jackson, S.
Leech, C. S.
Luckett, G.
Morton, W. S.
O'Connor, F.
Parker, J.
Pearson, A. E.
Pinder, R. G.
Pite, W. A.
Pither, F. L.
Quick, F. W.
Rogers, F.
Ryan, W. P.
Savery, C. E.
Shiner, C. M.
Siddall, W. J.
Smith, F. J.
Strawbridge, G. C.
Tanner, W.
Thomas, R. J.
Tansley, J. B.
Tyldsley, W. L.
Vicars, A.
Walmisley, J. W.
Ward, J.
West, J. G. T.
Whitbread, R.
Williams, S. W.
Witts, J. W.
Worley, R. J.
Yates, T. C.

Mr. Ewan Christian (President of the Royal Institute of British Architects) and other architects have not signed the agreement, on the ground that they do not now compete, but at the same time heartily support the objects of those who have signed the agreement.

The number of signees now amounts to 1,431 (see *Builder* for May 24, 1884, p. 762).

REARS OF HOUSES.

BY Section 29 of 18 and 19 Vic., c. 122 (The Metropolitan Building Act), it is enacted that:—

"Every building used or intended to be used as a dwelling-house, unless all the rooms can be lighted and ventilated from a street or alley adjoining, shall have on the rear or side thereof an open space exclusively belonging thereto of the extent at least of 100 square feet."

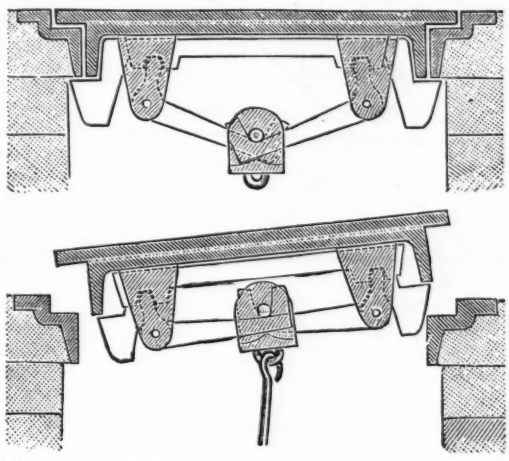
And the Metropolis Management and Building Acts Amendment Act, 1882 (45 Vic., cap. 14), Section 14, enacts that:—

"Every new building begun to be erected upon a site not previously occupied in whole or in part by a building after the passing of this Act intended to be used wholly or in part as a dwelling-house, shall, unless the Metropolitan Board of Works otherwise permit, have directly attached thereto and in the rear thereof an open space exclusively belonging thereto of the following extent:—Frontage not exceeding 15 ft., the extent of the open space is to be 150 square feet at the least, and so on up to frontages exceeding 30 ft., when the open space is to be 450 ft. Every such open space shall be free from any erection thereon above the level of the ceiling of the ground story, and shall extend throughout the entire width (exclusive of party or external walls) of such buildings at the rear thereof. The provisions of this enactment shall be in addition to and shall form part of the rules of the Metropolitan Building Act, 1855, and the said Act shall be construed accordingly."

Great difficulty arises in the construction of these two sections, but the consensus of opinion seems to be that section 29 of the Act 1855 is so far repealed where it is inconsistent with section 14 of the Act, 45 Victoria, cap. 14, and that even if the rooms can be lighted and ventilated from the street or alley adjoining, the buildings must now have a space at the rear, according to the frontage occupied by the same, unless the Metropolitan Board of Works' dispensing power is exercised or the ground has been previously occupied by other buildings. A further difficulty also may arise in cases where there is a doubt as to which is the rear of a house, as, for instance, that of a house built between two parallel streets, and in such a case it would be well to get the Board to define the open space to be left.

Rapid Tunnel Driving.—We are informed that the distance accomplished last week by Colonel Beaumont's tunnelling machine through the red sandstone under the Mersey was eighty-seven yards, which is stated to be the "fastest on record." The heading now being driven, and which is nearly completed, has a total length of about 950 yards, and this, as well as the previous heading of about 700 yards in length, are intended for effecting the ventilation of the main tunnel. The total distance driven by Colonel Beaumont's tunnelling machine (which cuts a circular heading rather over 7 ft. in diameter) in connexion with the Mersey Tunnel is about 2,250 yards, which includes the first operation, viz., the boring of the drainage heading.

HAYWARD'S SELF-LOCKING COAL PLATE.



IN our notice of the Building Trades' Exhibition last week, we briefly referred to this coal-plate, which has a protecting ring fixed in the pavement into which the coal-plate is dropped and immediately secured or locked by projecting bolts on each side, actuated by an ingenious arrangement of two small levers with a small weight suspended from the centre. The plate can be pushed out when required by a broom-handle or stick, or by a rod connected to the centre weight.

The wood-cut clearly shows the simplicity of the arrangement.

The dangers of insecure coal-plates are manifest, and it appears to us that builders and householders will find in this new coal-plate (manufactured by Messrs. Hayward Bros. & Eckstein, of Union-street, Borough) all that can be desired to ensure security.

STREET ARCHITECTURE IN LONDON.

SIR,—Is *anybody* interested in the street architecture of London, or are we all,—artists, and architects, and editors, and merchants, and idlers,—so busy with the affairs of Afghanistan and Egypt that we cannot see what is going on before our eyes?

A fine street is at last being made, in the very heart of the metropolis, which will unite the north and south in a grand sweep of traffic. For that all Londoners should be thankful. It stretches from the Haymarket to Oxford-street, so that the British Museum, at one hand, will be able to shake hands will Pall-Mall at the other. But, just as this great highway curves into Oxford-street, having escaped the perils of Soho, St. Giles's, and Bloomsbury, lo! a sudden obstacle rises in its path. This obstacle does not at first sight seem very formidable. It has no architectural beauty, it possesses no antiquarian interest, it recals no tender memories of departed genius, it bears no specially sacred associations,—it is nothing more than a small public-house, the Black Lion, at the corner of Duke-street. Nevertheless, it appears to be too much for the Metropolitan Board of Works to get over. The sweep of traffic is made to sneak round it, and one of the finest streets of London is made to end with an architectural hobgoblin.

Now there must be some reason for this fiasco. Nobody would designedly break the splendid curve with which two such streets should unite by the projecting angle of a tap-room. The Board of Works are bound to take care of the ratepayers' money; and if the cost of demolishing the beer-shop is too extravagant, let them say so, and we shall at least commend them for economy. The Board of Works cannot ride rough-shod over the rights of private property; and if the *real lion* that stops the way is some great and inexorable landowner, again let them say so, and we shall sympathise with their impotence. But, in counting the cost, do not let them forget that if they fail to extinguish the little public-house that ramps at the corner of Duke-street it will be quite enough to cover with derision one of the noblest schemes for the improvement of London.

March 23, 1885. WYKE BAYLISS.

NON-ACCEPTANCE OF LOWEST TENDER.

SIR,—On p. 366 of your paper for March 14, you gave a decision of the late Mr. Justice Willes (who was one of our most eminent judges) upon a case some fifteen years since.

You further say, "It is contrary to common sense; for it may well be that a tender may be so low as to be obviously incompatible with sound work, or may be made by a person unadvisable to be employed." Now, sir, I wish to ask if neither of these two objections can be urged against the contractor, and still more if he, the contractor, is bound by the conditions of contract,—say, for a contract of 40,000*l.*,—to provide sureties to the amount of 10,000*l.*, and start the works by placing 3,000*l.* worth of plant upon the ground, and also to leave ten per cent. retention money, what justice there is in the advertiser's not accepting the lowest tender? A reply from your able and impartial pen will oblige. AUGUST KRAUSS, Contractor.

Colston-street, Bristol.

*** The decision in Spencer *v.* Harding was that of Justices Willes, Keating, and Montague Smith, though judgment was delivered by the first named. The fact of this decision having remained unquestioned for fifteen years indicates that it is a sound one. Other reasons why an employer might not wish to accept the lowest tender might be given; for instance, the lowest tender but one might be by a local man, and the difference between his tender and that of the lowest not very great, and the employer might prefer, either from neighbourly feeling or because he could communicate more easily with the contractor, to accept that of the local man. *Primâ facie*, an employer will get the work done at the least possible cost, and so will in most cases naturally accept the lowest tender, but it is ridiculous to suppose that employers will, as a rule, ever bind themselves to accept the lowest tender, and so be obliged to accept the offer of a man about whom they may know nothing. In the case given by our correspondent probably an employer would accept the tender unless he had other reasons to the contrary. Our correspondent, however, does not seem to see that there can be no injustice in an employer not accepting the lowest tender when he has not expressed his intention in the advertisement to accept it. If he had expressed his intention so to do, then clearly he would be under a legal and moral obligation to accept the lowest offer. Moreover, the contractor is in no worse position, if his be the lowest tender and be not accepted, than if it be the lowest but one and not accepted; he makes an offer simply on the chance that it may be the lowest and may be accepted.

PROVINCIAL NEWS.

Bournemouth.—One of the oldest houses in Bournemouth, the Tregonwell Arms, is at last being pulled down, in the course of making a new street to the Beckford Estate, under the superintendence of the architects, Messrs. Kemp-Welch & Pinder. By some, its demolition seems to be regarded as almost an act of sacrilege. Though not an ancient historical building, it has been regarded locally with a kind of veneration, partly from the fact that it is one of the oldest houses in the town, and partly because its retired position and ivy-mantled porch gave it an air of respectable old age, that was in contrast to the more modern buildings which have gradually grown up around it. Thirty-five or forty years ago the Tregonwell served the double purpose of inn and post-office, and the letters are said to have been sorted in the public bar. Times have changed since then, and Bournemouth has attained a popularity such as at that time was never dreamed of.

Stratford-on-Avon.—An ancient house, dated 1597, a building of great interest to all visitors to Shakspeare's town, has of late shown signs of decay, the beam carrying the upper floors having given way. The whole of the ground-floor front has been taken out, and a new front, more in character with old work, has been put in, consisting of strong oak mullions and transoms filled in with lead-work. The front removed was about 80 or 100 years old. Mr. T. W. F. Newton, of Waterloo-street, Birmingham, was the architect.

Whitfield.—By the generosity of Miss Wood, the Church of St. James, Whitfield, Glossop, has been furnished with a new clock, manufactured by Messrs. J. W. Benson & Co., of Ludgate-hill, E.C. The frame is horizontal, which allows any part to be removed without disturbing the rest. All the wheels are of gun-metal and the pinions of steel, cut from the solid, and, as both wheels and pinions are engine-cut, their accuracy is secured. The dials, four in number, are 4 ft. in diameter in richly-gilt skeleton iron-work. The escapement is Graham's dead-beat, and the pendulum is compensated to counteract the variations of temperature. The clock strikes the St. Mary's, Cambridge, quarter chimes, and the hours on a tenor bell of 12 cwt.

Bristol.—The Bristol Waterworks Company are engaged in making an important addition to the means of supplying Bristol and the neighbourhood with water, a large portion of which is nearly completed. The work undertaken will cost close upon a quarter of a million, and will so strengthen the supplying power of the company as to enable it to meet the growing requirements of the population that it has to serve. An additional reservoir is in course of construction at Barrow, where there are already two immense storage reservoirs, and the company have also acquired new springs at Sherborne. The necessary mains are being laid from that place to Durdham Down, Bristol, some fifteen miles. A portion of the work has been most difficult, necessitating the making of a tunnel through Ursleigh-hill, Whitchurch. The levels are so uneven just here that tunnelling to the length of a mile became absolutely necessary. Operations were commenced some fifteen months since, and are now practically completed. On the invitation of the contractor a party of friends assembled at the tunnel on Monday last to witness the operation of blowing in the wall of stone separating the two parts of the tunnel, it having been driven from both ends simultaneously without an intervening shaft. The engineers are Messrs. John Taylor & Sons, 27, Great George-street, Westminster, S.W.; Mr. G. Gooch, superintendent engineer; Mr. Sellick, inspector; and the contractor, Mr. A. Krauss, of Bristol.

Newcastle-on-Tyne.—About 20,000*l.* is to be expended in making additions to the Newcastle City Lunatic Asylum at Coxlodge. Mr. Arthur B. Plummer, of 46, Cloth Market, Newcastle-on-Tyne, is the architect for the work, which will shortly be commenced.

SCHOOL-BUILDING NEWS.

York.—A new day-school, in connexion with the Roman Catholic Mission the English Martyrs in Blossom-street has been opened. The school is a two-storied red brick structure, relieved with stone dressings. The cost of the edifice has been upwards of 2,000*l.* Messrs. Goldie, Child, & Goldie, of London, were the architects, and the contract has been carried out by Messrs. Biscomb & Sons, of York.

Snydale (*near Pontefract*). — New Board Schools here, for the accommodation of 325 children, were opened on the 9th instant. The style of architecture is an adaptation of Domestic Gothic, red brick being the material used for the walls, with Ancaster stone for window-heads, cills, mullions, tabling, and other dressings. The schools, with master's house, stand on half an acre of ground, given by Mr. Rowland Winn, M.P. Messrs. Macfarlane, of Glasgow, have supplied the castings for eaves gutters and lavatory ranges. The schools are warmed with old style hob-ranges, specially made from designs approved by the architect. The amount of contract has been 1,997*l.* Messrs. Jackson, Bros., of Goole, were the contractors, and Mr. William Shackleton, of Pontefract, was the architect.

STAINED GLASS.

Gillingham (*Kent*).—A painted window has recently been erected in the parish church here to the memory of the late Mr. Rumney, of Stubbin's House, Lancashire (father-in-law of the vicar). The window, which consists of two lights and tracery, is treated in the fourteenth-century style, and the subjects are the Marys preparing Spices and the Marys at the Tomb. The window has been designed and executed by Mr. Charles Evans, of Warwick-street, Regent-street, W. The large painted east window, erected in 1869, has also undergone extensive alterations in detail and colour by the same artist.

Capetown.—A large Munich stained-glass window has been erected in St. George's Cathedral, Capetown, in memory of the Right Rev. Henry Alexander Douglas, Bishop of Bombay, who for some years prior to his appointment to that see was Dean of Capetown. The subject represented is the "Charge to Peter," and the artists are Messrs. Mayer & Co.

Knaresborough.—The first of the aisle windows in Holy Trinity Church has been filled with stained glass. Messrs. Powell Brothers, of Leeds, are the artists.

Elland.—A two-light memorial window has been placed in Elland Church, Yorkshire, from the studio of Messrs. Powell Brothers, of Leeds.

The Student's Column.

DESCRIPTIVE GEOMETRY.—VIII.

GIVEN *a plane* P *by its traces* P^h *and* P^v, *select other projection planes in which* P *will be part of the elevation plane itself.*

Here we begin by making a new plan on a $L^1 T^1$ perpendicular to P^v, and then make a new elevation with $L^{11} T^{11}$ on P^{h1}, as in fig. 43. In both these problems each change of projection plane means altering the projections of all the other parts of the figure one may be studying, as well as the traces of the plane P. (See fig. 43.)

Given a plane P *on which a cube is placed, of which* $a^h b^h$ *is the horizontal projection or plan of one side of the base, draw the cube completely in plan and elevation.* (See fig. 44.)

We shall call *a c* the other side of the base of the cube, and *a d* its height. The problem consists in finding the projections of the points *a b c d*. To do this we shall, as in the former problem, make a new plan and elevation, in which the plane P will coincide with the plan itself.

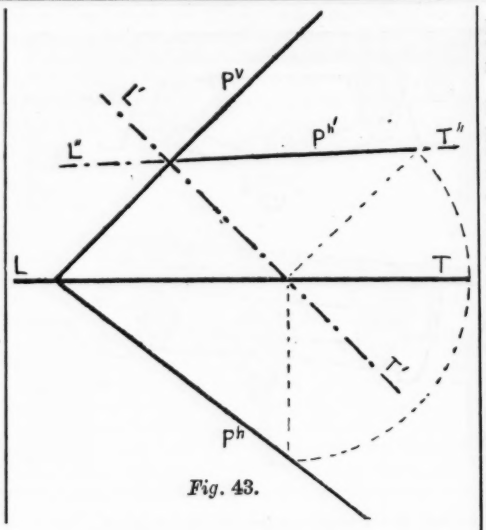


Fig. 43.

We first make a new elevation by taking $L^1 T^1$ perpendicular to P^h, then draw P^{v1}; as the points *a* and *b* belong to the plane P, the elevations a^{v1} and b^{v1} will be on P^{v1}, we shall find them by carrying from a^h and b^h lines perpendicular to $L^1 T^1$ up to P^{v1}. Then we make a new plan, taking P^{v1} for our $L^{11} T^{11}$, and plane P coincides with the plane of the plan. The new plans of *a* and *b* will be a^{h11} and b^{h11}, we can draw on this plan a^{h11} c^{h11} the other side of the base of the cube; as for the vertical angle *a d* we know that d^{h11} will fall on a^{h11}, and that the elevation of *d* will be in d^{v1} at a height above $L^{11} T^{11}$ equal to the side *a b*. This done, we draw the plans of *a b c d* according to $L^1 T^1$, and then the elevation of these same points according to L T, following the methods we have studied above. Then we can easily complete the other sides of the cube, as we know that their projections are parallelograms.

This problem is nothing but an application of the preceding ones to a special case, and is

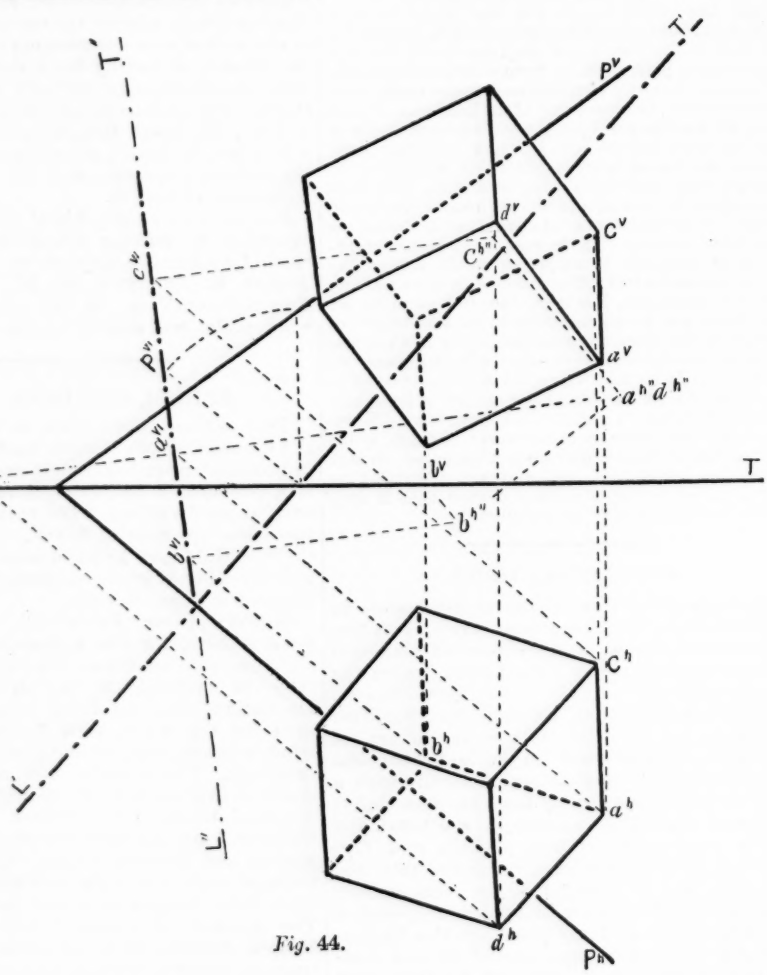


Fig. 44.

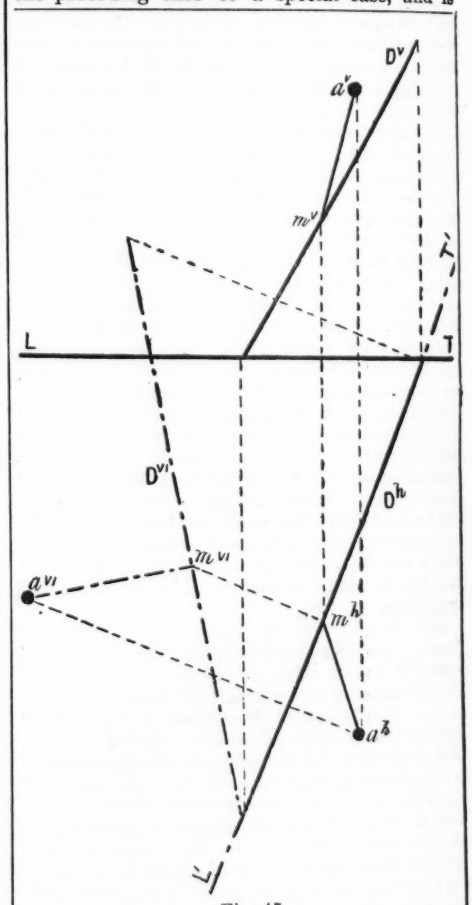


Fig. 45.

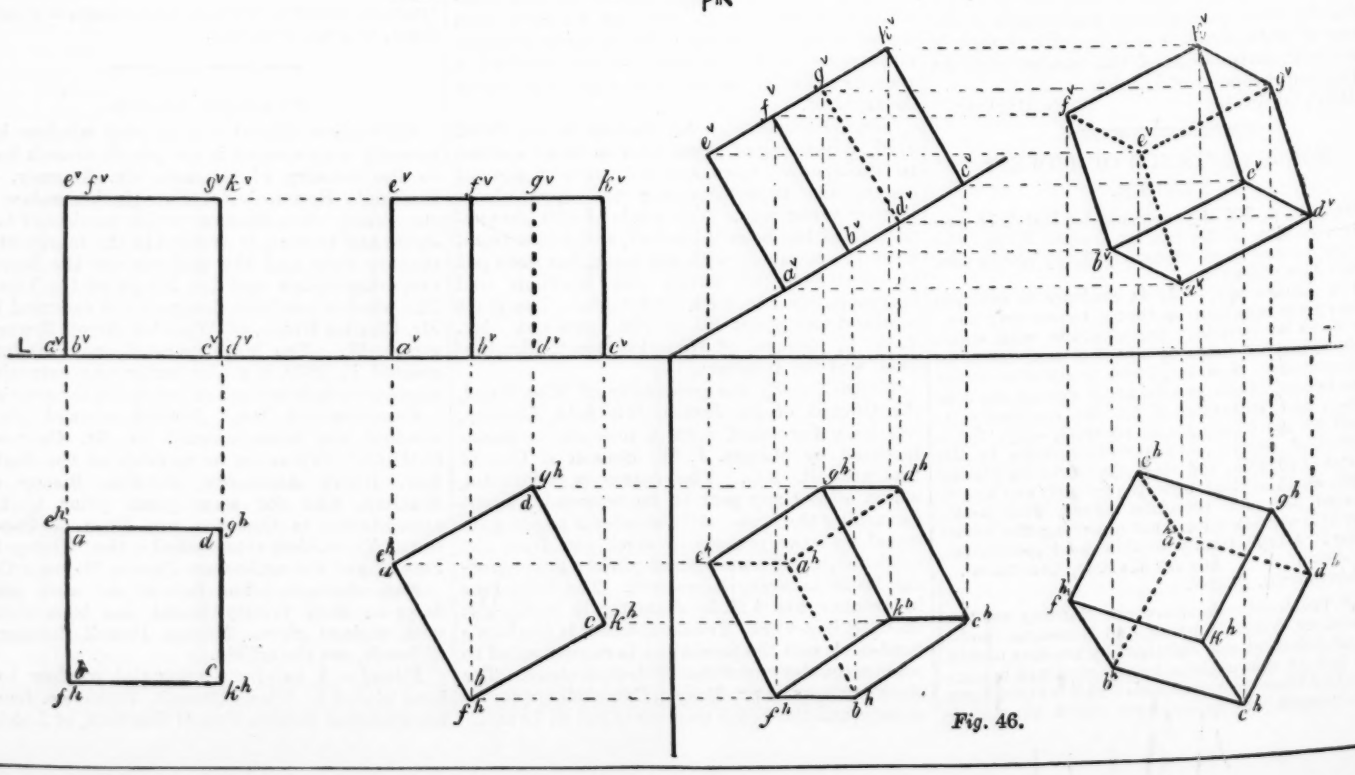

e^v f^v g^v k^v
e^v f^v g^v h^v
L a^v b^v c^v d^v
a^v b^v d^v e^v
e^h g^h a d b c f^h k^h
g^h d e^h c k^h b f^h
k^v g^v f^v e^v c^v d^v b^v a^v
g^h d^h a^h k^h c^h f^h b^h
c^h g^h a^h d^h f^h k^h b^h c^h

Fig. 46.

well worthy of being reproduced on a large scale as an exercise.

Given a point a and a line D, *draw a perpendicular line from a to* D.

We make an auxiliary elevation both of the line and the point, taking D^h for L^1 T^1. In this position, we know that the elevation of the perpendicular will be a^{v1} m^{v1} perpendicular to D^{v1}, and we can easily draw the plan and elevation of the point *m* on the old projection planes according to L T. The method we used for measuring the length of the hip of a roof would give us the length *a m* distance of the point A to the line D, if we desired it. (See fig. 45.)

Draw a cube in any position whatever.

This is done by making successively four elevations and plans as in fig. 46, which we hope is clear enough not to need any further explanation.

VARIORUM.

THE *Art Designer* (11, Paternoster-buildings), a quarterly publication, conducted and contributed to, we believe, in great measure, by ladies, contains in its last issue, and in its extra spring supplement of designs only, a series of very pretty outline drawings of work for china painting; heads, figures, and flowers. —— The "Sanitary Chronicles of the Parish of St. Marylebone" for January, 1885, by Mr. Alexander Wynter Blyth, Medical Officer of Health (printed by order of the Vestry) afford a record of much useful work done or in hand. Action under Torrens's Act has been taken in regard to three houses in Grafton-court, as to which the surveyor (Mr. H. Tomkins) is of opinion that no structural alteration or repair will render them fit for human habitation, and, therefore, he recommends that they be demolished. A shameful tale of overcrowding is revealed by the following paragraph:—

"Prosecution.—For several months a front kitchen at No. 16, Upper Rathbone-place, was known to be overcrowded, and notices had been served to decrease the number of the inmates. It was difficult to ascertain whether the notices had been obeyed or not; for those who slept there left before the hour at which an inspector could legally enter the premises. On the 29th of December, however, Mr. Phillips paid an early visit, and found in one bed three women, a man, and a child. On the floor were two other women and two dogs. The magistrate made an order for the abatement of the nuisance, and imposed a penalty of 20s., with 23s. costs."

——The "Builder's Blue-Book" for January, 1885, apparently issued under the auspices of the Central Association of Master Builders of London, is a small but very useful handbook of information about the institutions connected with the building trade. The first number is by no means complete, however. Some useful information as to water companies' charges for water for building operations is given. The publication is to be issued quarterly.——The papers on "Tall Chimney Construction," read before the Civil and Mechanical Engineers' Society in January, 1878, and December, 1883, by Messrs. R. M. Bancroft and F. J. Bancroft, and reported in the *Builder* on those occasions (see pp. 461, 490, of the volume for 1878, and p. 852 of the number for Dec. 29, 1883), have been revised, partly re-written, and considerably extended by the authors, and are about to be published in book form. We understand that the work will contain fully-dimensioned descriptions of upwards of eighty shafts in brick, stone, and wrought-iron, with weights, cost, &c., and accompanied by a large number of diagrams. The publishers will be Mr. John Calvert, of Manchester, and Messrs. Farncombe & Co., of Lewes. —— "Street's Indian and Colonial Mercantile Directory" for 1884-85 (Street & Co., 30, Cornhill, E.C.) is the tenth issue of that exceedingly valuable work of reference. It contains well-executed maps of all the principal countries, and the work appears to have been very carefully compiled. Classified lists of professions and trades are given, and a glance at the particulars set forth in connexion with some of the leading colonial cities shows that architects and surveyors are as numerous, comparatively, as they are in London and our large provincial towns. For instance, in Melbourne there are between sixty and seventy firms of architects, while in Sydney the number is upwards of 100.——Messrs. Kendal & Dent's "Time Chart of the World" (published at 106, Cheapside) is a curiosity in its way. It shows at a glance the exact difference between Greenwich mean time and the local time at all the principal towns throughout the world. Upwards of 300 dials are shown,—198 for English towns, twenty each for Scotland and Ireland, and sixty-eight Foreign and Colonial.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

38, Sanitary Traps. W. Henman.

The outer arm of the trap is funnel-shaped, and is either joined to or made in one with a short length of vertical pipe, by which it is connected with the soil-pipe below and the ventilating pipe above. The inner arm or arms are at an angle of about 45 deg., and formed to receive the connecting-pipe from the water-closet, bath, lavatory, or sink. The object is to prevent the entrance of sewer-gas to buildings through faulty joints by avoiding the use of untrapped joints in the building altogether.

211, Exhaust Ventilators. G. W. Webb.

The ventilator consists of a tube of gauze or perforated zinc, forming a continuation of the shaft. It is circular or otherwise in section, and mounted on a square base-plate. In the plate, and parallel to the sides of it, are oblong holes communicating with the interior of the shaft and covered by vertical cages whose outside faces are made of gauze, the other three being of sheet metal. At right angles to the diagonals of the square, and occupying about half the space between the outside angles of each pair of side cages, are two vertical sheet-metal plates. The whole is surmounted by a pyramidal cover. The wind blowing along the surface of the perforated plates draws or exhausts the air or smoke through them.

1,677, Planes. A. H. Valda.

This relates to an arrangement for preventing wear of the cutting edge of planes during the return stroke. A roller or slide moves in contact with the inclined surface of tapering rails, which are fixed to and are parallel with the length of the plane. The edge of the rails is flush with the bottom of the plane.

10,014, Chimney or Ventilator Tops. H. K. Bromhead.

The chimney top or ventilator is constructed with a series of wedge or cone-shaped apertures or channels, slightly inclined upwards to prevent down-draught. The tops of these apertures may be open, closed, or partially closed, and a concave cover may be attached to the upper part of the chimney-top or ventilator by hooks and a plug.

259, Girder and Fireproof Floors. H. H. Bridgman.

The girders which carry the floor are cast or rolled on a flange running along the web between the top and bottom flanges. The flooring rests upon the intermediate flange of which the position is fixed by the intended thicknesses of the common joists and concrete. The girders may be smaller than those made of two rolled joists, one above the other, and for a floor having a span of 20 ft., in bays of 10 ft., to carry 2½ cwt. to the superficial foot, suitable girders will be 12 in. by 5 in.; with common joists, 4 in. by 1¾ in. or 3 in. by 3 in., placed at a distance of 2 ft. apart.

260, Fireproof Floors. H. H. Bridgman.

The floor is constructed without hollow space under the boards, the thickness being thereby reduced and the floor rendered less easily combustible. When the floor-boards are of sufficient thickness they are prepared with grooves in their lower edges. Felt or brown slag or lime is spread between the floor-boards and concrete.

554, Doors for Blocking or Fortifying Tunnels. R. Roper.

The doors are made on turn-tables or arranged to slide up or down or across the line from suitable recesses in the roof, floor, or side. When the tunnel is to be closed, the turn-tables are revolved until the doors abut on projections cut in the side walls. The direction is so arranged that in the event of a train colliding with the door, it is the more securely closed.

661, Ventilator. E. Woolfenden.

A tube, placed inside a casing in the roof of the building communicates with the atmosphere, and has its upper end filled with a revolving cap or cowl and its lower end closed by a hinged door. The cowl is provided with a feather, so that the perforations in it will be always facing the wind, and thus air will enter the tube and escape into the building through suitable openings near the lower end of the tube below the casing. Foul air will pass away through the space between the casing and the tube, a cover being fitted to exclude the rain. The inner tube is fitted with a damper to regulate or shut off the current of fresh air.

1,558, Preventing Smoke in Open Fireplaces. R. Wright.

A fine powder, compounded of sea-coal and lime or burned limestone, is sprinkled on the top of the fuel from a box with a perforated cover, so as to effect combustion without the evolution of smoke.

2,524, Access Pipes to House-drains and Soil-pipes. G. C. Davies.

The cover screwed over the aperture for cleaning and inspection is rendered gas-tight by a groove and tongue, the joint being stuffed with asbestos, rubber, or white lead and tallow. The inner face of the cover is formed to the curvature of the pipe, with the object of avoiding any recess in which paper or anything likely to choke the drain could lodge. Rings are provided to the cover for the purpose of removing it.

APPLICATIONS FOR LETTERS PATENT.

March 6.—2,940, N. Bonnett, Window Fastener. —2,964, J. Prince, Improvements in Brick and other Kilns.—2,977, A. Kohlhofer, Improved Construction of Domestic Stoves.—2,988, H. Kinten, Improvements on Water-closets.

March 7.—2,992, J. Beanland, Improved Brick, Quarry, or Slab, for Forming the Smoke and Air Flue in Chimney Stacks.—2,999, E. Newton, Improvement in Frame Saws.—3,012, R. Hale, Joint Connexions for Sanitary, Drain, and other Pipes.—3,021, J. Qurin, Parallel Vices.—3,022, H. Haddan, Machinery for Cutting and Dressing Stone.—3,032, J. Gibbon, Ventilation of Sewers, &c.—3,038, H. Lake, Improved Material for Covering Walls and Ceilings.

March 9.—3,047, T. Normanton, Apparatus for Preventing the Bursting of Cisterns and Pipes by Frost.—3,062, W. P. Buchan, Improvements in Ventilators.—3,065, P. Simons, Improved Tile.—3,070, J. Garrett, Construction of Heating and Ventilating Flues.

March 10.—3,086, G. Taylor, Attaching Door and Other Knobs to Spindles.—3,097, J. and H. Rust, Improved Vitreous Material for Paving Purposes.—3,099, W. Defries, Lubrication of Hinges.—3,105, L. Beauvais, Improved Portable Washstand.—3,138, G. Martin, Improved Method of Securing Slates to Roofs.—3,139, F. Schiffner, Cement or Lime Kiln. 3,130, J. E. and F. B. Rendle, Glazed Structures.

March 11.—3,177, G. Collings, Ventilator for Dwelling-houses and other Structures. -3,183, H. Ransom, Apparatus for Setting Saws.—3,186, W. Royston, Ornamentation of Woodwork.

March 12.—3,213, J. Butler, Apparatus to Regulate the Stroke of Tools for Slotting and Shaping Machines.—3,223, M. Syer, Double Action Flushing Apparatus.—3,227, E. and A. Marples, Improvements in Spokeshaves.—3,228, J. Taylor, Pipe Joints.—3,230, H. Taylor, Movable Ventilating Sewer Manholes and Frames.—3,232, A. Maher, Automatic Door Closing and Locking Apparatus.—3,248, D. Sugg, Inverted Gas Burner.—3,251, G. and E. Hammer, Black or Coloured Plaster, Cement, &c., for Writing Surfaces on Walls, &c.—3,255, W. Mead and S. Jenner, Chimney Top or Ventilating Shaft.

March 13.—3,262, T. Messenger, Interlocking Coupling Joint for Water, Gas, or Steam Pipes.—3,283, R. Pearse, Opening and Closing Fanlights and Casements.—3,284, R. Pearse, Opening and Closing Fanlights and Casements through an Outer Wall.

March 14.—3,315, D. Macdonald, Damp Proof Walls.—3,334, J. Humphreys, Automatic Gas-Heating Apparatus.—3,349, F. Biggs, a Spring Hinge.

March 16.—3,368, G. Whiteside and J. Hoyle, Apparatus for Brushing and Cleaning Planks or Timber preparatory to Planing, Cutting, or Sawing. —3,371, J. Hughes, Rack Pulleys.—3,383, W. Soutter, Improvements in Water-slide Gaseliers or in Gas Chandeliers.—3,384, E. Davis and M. Morris, Improvements in Picks.—3.391, H. Howard, Double Action Shutter Cabinet.—3.396, H. Sans, Improvements in Hinges.—3,405, W. Lake, Improvements in Pavements.

March 17.—3,422, D. Thomson, Improvements in Ventilating.—3,443, J. W. Lowe, Improvements in Planes.—3,464, R. Evered, Flushing Cisterns.

March 18.—3,477, T. Wilson and H. Johnson, Chimney or Ventilating Cowls.—3,482, T. Hawkins, Glazing with or without Putty.—3,488, G. Stephens, Coloured Ornamental Glass for Windows or Decorative Purposes.—3,493, J. Anderson, Automatic Saw-Setting and Sharpening Machines.—3,502, W. Goebel, Gas Burners.—3,512, E. Summerfield, Adjusting and Fixing Door Knobs to Spindles.

March 19.—3,534, O. Flagstad, Improvements in Vices.—3,536, P. Nevill, Improved Instrument for Measuring Angles.—3,549, W. Lea and J. Beech, Adjustable Brackets or Supports.—3,552, J. Barnett, Improvements in Stoves.—3,571, A. Sauvée, Joints for Iron Pipes.—3,579, J. Johnson, Improvements in Means for Decorating Surfaces.

PROVISIONAL SPECIFICATIONS ACCEPTED.

8,250, W. M. and W. G. Macvitie, Window Fastenings.—8,317, J. Fottrell, Improved Hygienic Concrete.—17,014, H. Defty, Gas-lighting Apparatus. —1,422, W. Devoll and O. Howl, Tube Vices.—1,634, W. Collinson, Construction of Silos.—1,799, A. Keighley and A. Watson, Holdfasts for Carpenters, Joiners, Cabinet-makers, &c.—1,872, A. Putney, Improvements in Wood Flooring.—2,001, W. Thompson, Construction of Concrete Buildings, &c.—2,063, E. Wheatley, Improvements in Gaseliers.—2,095, J. Doulton, Fireproof Floors.—2,323, G. Oulton, Soldering Irons heated by Gas Jet or Flame.—2,349, A. Clark, Combined Truck and

Ladder.—2,373, B. Gordon, Flushing Apparatus.—7,581, T. Potter, Construction of Silos.—12,019, W. Potts, Ventilating Apparatus.—1,355, G. Campbell, Improvements in Fire-grates. — 1,460, J. Holden, Ventilating and Smoke-consuming Appa. ratus.—1,461, A. Lineff and W. Jones, Brick-cutting Tables.—1,893, G. Hammond, Mitre Cramp Frame.—2,223, J. Gibson, Securing Slates to Roofs, &c.—2,247, J. Horne and S. Hollyman, Chimney-pot for Preventing Down-draught. — 2,364, P. Hanway, Water-closet Seats or Covers.—2,451, M. Bressac, Industrial Product for Panels, &c.—406, M. Macleod, Laying Asphalte Pavements, Roofs, Roads, &c.—1,777, G. Chubb and G. Exton, Door Locks, Latches, and Furniture.—1,888, G. Ellis, New Portable Pavement or Flooring.—1,962, D. Lee, Adjusting the Movable Parts of Window Sashes, &c.—2,092, A. Campbell and J. Ash, Improvements in the Catches of Door Locks or Fastenings.—2,187, R. Evered, Bell-work Fittings. —2,233, H. Cleave, Lath Backing for Plaster Work.—2,319, T. Normanton, Water-pipes and Flushing Cisterns to prevent Bursting by Frost.—2,519, M. Brown, Combined Bedstead and Bath. —2,742, R. Goolden, Manufacture of Improved Plastic Compounds. — 2,767, E. Reynolds, Syphon Water-waste Preventer Cistern.—2,870, D. James and J. Harsant, Water-waste Preventers.—2,873, S. Kirby, Gully Traps.— 14,997, W. Burdock, Improvements in Glazing.—1,940, J. Easby, Automatically Closing the Aperture of Closet Seats.——2,453, G. & S. Messenger, Ventilators and Chimney Cowls.—2,455, A. Willway, Regulating Temperature in Dwellings and Buildings.—2,566, J. White, Ventilating Cowls.—2,626, J. Stevens and C. Major, Spring Hinges for Doors.—2,691, C. Billington and J. Newton, Fastening Knobs to Spindles.—2,749, E. Taylor, Ventilating Apparatus for Windows, &c.—2,751, S. Hurst, Sash Fasteners. —2,905, P. Walker, Ventilators.—2,919, W. Tebboth, Chimney Top or Sanitary Ventilator.—2,926, J. Gagon, Draught and Dust Excluder for Doors.—2,940, N. Bonnett, Window Fastener.—2,956, E. Collier, Attaching Knobs to their Spindles.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

5,277, T. Dale, Warming, Ventilating, and Disinfecting Hospitals and Other Buildings.—7,451, A. Bell, Rope Pulley Blocks.—7,617, T. Robinson, Slides for Horizontal Saw-Frames. — 7,795, A. Reaney, Sockets for Chisels and other Tools.—7,972, D. Bostel, Improvements in Water-closets or Urinals. —8,997, O. Gibbons, Making and Ornamenting in Relief Plastic Clay, Slabs, Tiles, Plaques, and Architectural Ornaments.—10,114, W. Lake, Improvements in Mosaic and similar work.—10,662, C. Groombridge, Apparatus for Raising and Closing Window-sashes, Panels, and Shutters.—13,028, B. Knight and J. Durant, Pulley Frames of Sliding Chandeliers and Gaseliers.—425, W. Wegner, Improved Staircase.—1,443, R. Stoffert and T. Dykes, Improvements in Girders.—1,601, H. Bridgman and J. Russell, Warm-air Stoves.—4,997, T. Clayton, Ventilating Apparatus.—5,693, G. Burnell, Improved Privy.—8,198, B. Baron, Draught, Dust, and Rain Excluder for Doors.—8,250, W. A. and W. G. Macvitie, Window Fastenings.—8,297, C. Tighe, Adjusting Door Knobs on their Spindles.—8,317, J. Fottrell, Improved Hygienic Concrete.—9,338, F. Wildegoose, Safety Sash Fastening.—6,817, H. Westman, Domestic Open Fire-grates.—8,249, T. Twyford, Flushing Wash-out Closet Basins and Ventilating same when in use.—8,251, W. M. and W. G. Macvitie, Attaching Cupboard-Turn Tongues to their Spindles.—8,385, D. Gestetner, Improvements in Stencils.—8,415, J. Brierley, Improvements in Chimney Tops.—8,468, H. Sutcliffe, Improvements in Lavatory or Cabinet Stand Wash-basins.—11,224, H. Williams, Window-sash Fastener.—11,990, R. Jones and J. Cunningham, Sash Fasteners.—12,783, P. Mooney, Wash-out Water-closets.—12,811, J. Donald, Graving Docks. —1,033, E. Hill, Hanging and Supporting Window Sashes.—2,161, H. Faija, Apparatus for Treating Slurry or Slip in the Manufacture of Portland Cement and Bricks.—2,189, A. Reddie, Folding Gates.—5,368, G. Spratt, Improvements in Screw-drivers. —5,787, J. Kaye, Actuating the Catches of Door Locks or Fasteners.—6,180, F. Preston and Others, Water-closets.—8,259, F. Primrose and J. Mellowes, Improvements in Glazing.—8,339, J. Stones, Automatically Shutting and Opening the Egress from and Access to Hoist Wells.—10,164, S. Bivort, a New or Improved Mode of Flooring.—12,787, W. Corteen, Improved Methods of Opening and Closing Windows.

Non-acceptance of Lowest Tender.—A writ has been issued against the Mayor and Corporation of Cardiff, on behalf of Mr. A. Krauss, contractor, of Bristol, for breach of faith in not accepting his tender for the new reservoir works at Llanishen, the tender being the lowest. The plaintiff claims 1,000*l.* and the amount expended in the preparation of his tender.

A New Presbytery is to be built at Alexandria from designs by Messrs. Pugin & Pugin, of 19, Surrey-street, Strand, and Westminster.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

MARCH 10.

By SEDGWICK, SON, & WEALL.

Watford, Essex-road—The Residence called "Guilsboro' Villa," freehold	£650

MARCH 17.

By R. A. NOTLEY.

City—159, Fenchurch-street, and 21 and 22, Lime-street, freehold, area 1,400 ft.	16,700
Portman Estate—47 and 48, Upper Berkeley-street, 36 years, ground-rent 64*l.*	2,260

By A. SAVILL & SON.

Bedford-row—3 to 6, Great James-street, and 6, Cock Pit-yard, 28 years, ground-rent 328*l.*	3,500

By DEBENHAM, TEWSON, FARMER, & BRIDGEWATER.

Chelsea—31, Markham-square, 57 years, ground-rent 7*l.* 10s. 6d.	850
No. 1, Markham-place, 60 years, ground-rent 4*l.*	360
Paddington—14, Dartington-terrace, 73 years, ground-rent 5*l.* 5s.	300

By HARDS, VAUGHAN, & JENKINSON.

Upper Thames-street, Anchor-alley—A quantity of old building materials	155

By MADDOX & SON.

Hampstead, West End-lane—"Oakland House," 81 years, ground-rent, 8*l.*	900

By FAREBROTHER, ELLIS, CLARK, & Co.

Wandsworth-common—Freehold land, 8a. 1r. 10p.	28,000
Fulham—Freehold land, 11a. 2r. 38p. and Three Houses	13,000
Margrave-rd.—A plot of freehold land, 0a. 1r. 37p.	500
Smithfield, 26, St. John-street—Freehold	6,050
Hampstead, Greenhill-road—A plot of freehold land	3,800

By MURRELL & SCOBELL.

Goodman's-fields—65, Mansell-street, 18 years, ground-rent 100*l.*	1,000

By WILKINSON & SON.

Brighton—8, Preston-street, freehold	1,280
Nos. 42 and 43, Upper North-street, freehold	715

MARCH 18.

By F. S. PRIEST.

Harlesden-hill—Ground-rent of 8*l.* a year, reversion in 23 years	370
Ground-rent of 8*l.* 8s. a year, reversion in 43 years	390
Ground-rent of 19*l.* a year, reversion in 13 years	400

By J. P. LASH.

Hackney—13, Cadogan-terrace, 69 years, ground-rent 6*l.* 6s.	340
Stepney—24, York-street, term 7½ years, no ground-rent	60

By J. BAKER & WILKINSON.

Oxford-street—45, Wells-street, 15 years, ground-rent 75*l.*	865

By REYNOLDS & EASON.

Camden Town—3 and 5, Jeffrey's-street, 25 years, ground-rent 8*l.*	455

MARCH 19.

By J. G. & A. PREVOST.

Mile-End—52 to 58 even, Shandy-street, freehold	930
Nos. 46 and 48, Rutland-street, 22 years, ground-rent 10*l.*	520

By C. W. MILLAR.

Hampstead—Improved ground-rents of 22*l.* 10s., term 67 years	445

By PHILLIPS & SON.

Kentish Town—5 and 8, Willingham-terrace, 79 years, ground-rent 13*l.*	450

By BALL, NORRIS, & HADLEY.

Brixton — 39, Northway-road, 88 years, ground-rent 5*l.* 10s.	250

By NEWSON & HARDING.

Clapton—97, Clarence-road, and a plot of land, freehold	1,070
Holloway—506, Caledonian-road, 57 years, ground-rent 9*l.*	980
Nos. 2 to 12 even, Mildmay-road, 47 years, ground-rent 24*l.*	1,515
Dalston—9, Norfolk-road, 89 years, ground-rent, 9*l.* 10s.	400
No. 105, Graham-road, 76 years, ground-rent, 7*l.*	355
Finsbury Park—2, Prah-road, 80 years, ground-rent 4*l.* 5s.	415

By A. BOOTH.

St. John's Wood—15 and 16, Belgrave-road, 65 years, ground-rent 21*l.*	970

By S. CHADWICK.

Eastbourne—7 and 8, Sussex-gardens, freehold	1,420
Drury-lane — Ground-rents of 45*l.* a year, reversion in 51 years	1,150
Islington — 137, Copenhagen-street, 58 years, ground-rent 5*l.* 10s.	585
Stoke Newington — Copyhold ground-rent of 26*l.* a year, reversion in 24 years	775
Strand—Nos. 276 and 277, freehold	4,010
Charing-Cross — The lease of 7, Whitehall-place, and 33, Scotland-yard, 19 years	1,060
Pimlico — An improved rent of 106*l.* a year, term 22 years	1,330

MARCH 20.

By BAKER & SONS.

Bournemouth—The Boscombe Spa Hotel, 86 years, ground-rent 120*l.*	5,100
Croydon, Morland-rd.—Freehold land, 7a. 1r. 12p.	4,200
Malden — 1 to 10, South View-villas, 95 years, ground-rent, 40*l.*	1,500
Hendon Station Estate—Six plots of freehold land	540

By DENNANT & PORTER.

Hoxton—52 to 55, Buttesland-street, 14 years, ground-rent 2*l.*	825
Peckham — Ground-rents of 65*l.* a year, term 59 years	1,280
Wandsworth-road — Ground-rents of 30*l.* a year, 22 years, and short reversion	375

By PETO, YETTS, & Co.

Peckham—9, York-grove, 27 years, ground-rent 6*l.* 10s.	200
Fulham—1 to 8, Stanley-road, 69 years, ground-rent 15*l.* 6s.	1,460
Stanley-road—A plot of leasehold land	60

By PHILLIPS, LEA, & DAVIES.

Southgate—9, Holmesdale-road, 93 years, ground-rent 5*l.*	195

MEETINGS.

SATURDAY, MARCH 28.

Architectural Association.—Visit to Fishmongers' Hall, 2 (*Two*) p.m.

Building Trades' Exhibition at Agricultural Hall.—Closing day.

MONDAY, MARCH 30.

Society of Arts (Cantor Lectures).—Mr. J. Hungerford Pollen on "Carving and Furniture." IV. The Age of Gibbons, Boule, and that of their Successors (*continued*). 8 p.m.

Estate Exchange.—Annual Meeting of Members. 3 p.m.

TUESDAY, MARCH 31.

Institution of Civil Engineers.—Discussion on the paper by Mr. P. W. Willans on "The Electrical Regulation of the Speed of Steam-engines and other Motors for Driving Dynamos." 8 p.m.

Birmingham Architectural Association.—Mr. H. Clere on "Artisans' Dwellings and Acts of Parliament." 7.30 p.m.

WEDNESDAY, APRIL 1.

Carpenters' Hall, London Wall (Free Lectures to Artisans).—Professor T. Roger Smith, F.R.I.B.A., on "Some Celebrated Timber Roofs." 8 p.m.

British Museum.—Mr. W. St. C. Boscawen on "Assyrian and Babylonian Antiquities." VI. (The War in Heaven.) 2.30 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting. 8.30 p.m.

British Archæological Association.—Mr. Alfred C. Fryer on "Ancient Glass." 8 p.m.

Liverpool Architectural Society.—Mr. William Parslow, F.R.I.B.A., will read a paper upon "Lunatic Asylums." 7 p.m.

SATURDAY, APRIL 4.

Edinburgh Architectural Association.—Visit to Rosslyn Castle and Chapel.

Miscellanea.

Sunshine Recorders.—The Royal Meteorological Society opened its sixth annual Exhibition of Instruments on Wednesday, the 18th inst., at the Institution of Civil Engineers, 25, Great George-street, S.W. This exhibition was devoted to Sunshine Recorders and Solar and Terrestrial Radiation Instruments. With regard to the first-named class of instruments, it is stated that the first attempt at obtaining an instrumental record of the amount of sunshine was made by Mr. J. F. Campbell, of Islay, in the year 1854, when he mounted a hollow glass sphere filled with acidulated water in the centre of a cup of mahogany, so arranged that the sun's rays were focussed on the interior of the cup and burned it. The lines of burning, therefore, indicated the existence of sunshine. Solid glass spheres have been substituted for the hollow ones, and cards in metal frames have replaced the wood; but in its principle the sunshine recorder of 1885 differs little from that erected on Richmond-terrace, Whitehall, thirty years ago. Other modes of recording sunshine are based on the action of the rays of the other end of the spectrum on the actinic instead of the heat rays. Among workers in this direction may be mentioned Marchand of Fécamp, Sir Henry Roscoe, and others. The most recent improvements in this direction are those by McLeod and by Jordan.

Iron Exports of the United States.—At a time when the importation of American manufactures is engaging some amount of attention, the following figures may be of value, as showing the amount of iron and manufactured iron exported from the United States to Quebec, Ontario, and Manitoba during the last three months of the fiscal year ending June 30, 1884, viz.:—Pig iron, 9,620 tons; bar iron, 1,188,544 lb.; band, hoop, and scroll iron, 401,631 lb.; ingots, bars, and rods of steel, 1,889,664 lb.; locks and other builders' hardware, value 404,222 dollars; machinery, 907,514 dollars; plates and sheets of iron, 1,163,008 lb.; plates and sheets of steel, 172,704 lb.; stationary engines, value 12,406 dollars; other iron and steel manufactures reached considerably over a millions dollars in value. Even steel rails were exported last year from the United States, and there sold in competition with foreign supplies.—*Plumbing and Decorating Chronicle.*

National Agricultural Hall Company, Kensington.—The directors of this company have arranged with Messrs. Lucas & Son, of Kensington, to execute the necessary excavations and levelling required to place the ground in a fit state for the erection of the superstructure. We understand that the quantities for the whole of the works, including the iron roof, are now being prepared, with a view to inviting tenders.

The Franciscan Monastery at Upton, E., designed by Messrs. Pugin & Pugin, has just been commenced. Mr. J. Gregar, of Stratford, is the contractor.

Thompson Memorial Home, Lisburn.—This building, which was begun in August, 1883, is now completed and open for the admission of inmates. It was built and endowed to the memory of the late Dr. Wm. Thompson, F.R.C.S.I., M.D., who met with his death by accident on the Great Northern Railway (Ireland) about two years and a half ago. The building is of red brick and red sandstone. It has been planned to accommodate fifty-two patients and twelve nurses and servants, with provision for extension. The corridors and staircase are warmed by coils of low-pressure hot-water pipes, supplied by Mr. H. A. Purnell, of Glasgow, who also fitted the laundry drying-closet. The wards, &c., are warmed by Mr. D. O. Boyd's school ventilating grates. Messrs. R. Waygood supplied the hydraulic passenger-lift, capable of taking a couch and patient or two Bath chairs. The internal plumbing, which, owing to the size and nature of the building, is necessarily rather extensive, has been carried out by Messrs. Clements & Acheson, of Belfast. The gasfitting, done by Mr. John Hall, of Belfast, has one peculiarity worth attention. The iron tubing, carried on metal brackets outside the plaster of the walls, is made to do duty as picture-rods round the walls of the wards and along the corridors. The branch pipes, to supply the brackets, &c., are taken off this pipe. This arrangement has also the great advantage of exposing a leakage, should such occur. Mr. C. C. Macarthy, of Queen's-buildings, Belfest, fitted the electric bells throughout. The building was carried out by Mr. Robert Corry, from the plans and under the superintendence of Mr. Godfrey W. Fergusson, of Belfast. Mr. Peter Butler, of Kingstown, was the clerk of works.

Rock Life Assurance Company.—The new prospectus of this company (one of the oldest of the London companies, having been established in 1806) contains several features worth attention. A special point is made of a new form of life policy issued by the Company, under the title of "Investment Policies," embracing non-forfeiture; fixed surrender values printed on the policies; provision for old age, the premiums ceasing after a definite number; and "large profits for good lives." It is claimed that by this plan every insurer will be able at once to know the maximum amount of payment he will have to make for his assurance. The Company have also issued a small pamphlet giving examples of the application of investment policies to partnership arrangements.

The Lectures at Carpenters' Hall.—The last of the course of free lectures to Artisans at Carpenters' Hall will be delivered on Wednesday next, the 1st of April, by Professor T. Roger Smith, on "Famous Timber Roofs." The Right Hon. The Lord Mayor, Master of the Carpenters' Company, will take the chair.

Uppington.—The ancient church at Uppington, near Shrewsbury, is about to be restored and enlarged, at the sole expense of the Duke of Cleveland, the lay rector. His Grace has appointed Mr. J. P. Pritchett, of Darlington, architect, and a Faculty has been obtained to carry out the work according to his design.

Kingsbury.—The old and interesting church Kingsbury, Middlesex, is about to be restored and enlarged, from the designs of Messrs. Newman & Newman, architects, Tooley-street, London Bridge.

Sway (Hants).—A chancel is to be added to the Church of St. Luke, Sway, Hants, from designs by Messrs. Kemp-Welch & Pinder, architects, Bournemouth.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Public Baths	Cor. Bootle-cum-Linacre	50*l.*, 25*l.*, and 10*l.*	May 1st	ii.
Free Library	Wimbledon Local Brd	Not stated	Not stated	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Sundry Works, St. James's Church, Audlem	.....	Lynam & Rickman	March 30th	xxii.
Sewerage Works	Chelsea Vestry	G. R. Strachan	March 31st	ii.
Completion of Five Houses, Wallington	Horace Turnor	T. Spearing	do.	ii.
Repair of Private Streets	Acton Local Board	C. Nicholson Lailey, C.E.	do.	ii.
New Coastguard Station, Sidmouth	Admiralty	*Official*	do.	ii.
Making-up Roads, Battersea	Wandsworth Bd. of Wks	do.	do.	ii.
New Rectory House at Winwick	.....	E. Christian	April 2nd	xxii.
Pipe Sewer	Vestry of St. Matthew, Bethnal Green	*Official*	do.	xxii.
Ironwork for Footbridge, Cromford Station	Midland Railway Co.	A. A. Langley	do.	ii.
Do. Codnor Park Station				
Girder and Corrugated-Iron Floor-Plates, for Bridge, Cudworth				
Erection of Ten Coal Offices, Luton				
New Post-Office, Richmond	Com. of H.M. Works	*Official*	April 8th	ii.
Alterations and Additions to School	Rugeley Grammar School Governors	Ratcliffe & Holdsworth	do.	xxii.
Materials (Navy Contracts)	Admiralty	*Official*	April 10th, &c.	ii.
New Works at Gosberton Risegate Eau Drain	Commissionrs of Sewers	do.	April 12th	ii.
Shelter or Wind Screens, on Pier Head, &c.	Bournemouth Com.	R. W. Peregrine Birch	April 14th	xxii.
Passenger Station, Rogiet Junction	Great Western Ry. Co.	*Official*	do.	ii.
Goods Shed and Offices, Gloucester Station	do.	do.	do.	ii.
Main Drainage Works	Compton Gifford Lcl. B.	do.	April 16th	xxii.
New Schools, &c.	Chelsfield School Brd.	G. St. Pierre Harris	do.	xxii.
Wood Paving	Birmingham Public Works Committee	W. S. Till	April 20th	xxii.
New Works to Parish Church, Eastington	The Committee	Waller, Son, & Wood	April 22nd	ii.
Rebuilding Iping Church, near Midhurst	.....	E. P. Loftus Brock	Not stated	xxii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Clerk of Works	Farnham Main Sewr'ge	3*l.* per week	April 4th	xviii.

TENDERS.

For new infirm wards, washhouses, laundry, and other works at Spilsby Union Workhouse. Mr. J. Edwin Butcher, District Surveyor for the Spilsby Rural Sanitary Authority, architect:—

Hunter & Son, Spilsby	£2,139 0 0
J. Crawshaw, Skegness	2,133 0 0
S. Sherwin, Boston	2,125 0 0
W. Story & Son, Bourne	2,085 0 0
G. Dunseley, Skegness	2,075 0 0
J. T. Turner, Wainfleet	1,947 0 0
J. Holmes, Wainfleet	1,922 0 0
Hume & Scarboro', Spilsby	1,900 0 0
J. Richardson, Leake	1,895 0 0
W. Greenfield, Boston (accepted)	1,785 15 0

For new counter, pewtering, bar-fittings, &c., at the Lord Raglan Tavern, Shernhall-street, Walthamstow, for Mr. Sharp. Mr. H. F. Simmonds, Cambridge Heath, architect:—

W. & J. Burrow	£258 0 0
Lumley & Co.	241 18 0
Sanders & Sons	214 15 0
Rogers	210 5 0

For dwelling-house in Lea Bridge-road, Leyton, for Mr. Wedge. Mr. H. F. Simmonds, architect:—

Lipscomb	£340 0 0
Ling	248 0 0
Barton	245 0 0
Hardy (accepted)	250 0 0
Probert	250 0 0

For new schools, Goodrich-road, Honor Oak, for the School Board for London. Mr. Thomas J. Bailey, architect. Mr. T. Thornton Green, quantity surveyor:—

J. R. Hunt	£19,812 0 0
W. Tongue	19,600 0 0
H. Hart	18,805 0 0
Patman & Fotheringham	18,778 0 0
Wall Bros.	18,700 0 0
Grover & Son	18,641 0 0
W. Shepherd	18,624 0 0
W. Downs	18,545 0 0
Lathey Bros.	18,478 0 0
Wood Bros.	18,175 0 0
Oldrey	18,000 0 0
W. Boyce	18,000 0 0
W. & J. Croaker	17,990 0 0
S. J. Jerrard	17,983 0 0
Stimpson & Co.	17,788 0 0
C. Wall	17,757 0 0
Holloway Bros.	17,757 0 0
C. Cox	17,734 0 0
H. L. Holloway	17,690 0 0
W. Johnson	17,539 0 0
Kirk & Randall	17,332 0 0
E. C. Howell & Son	17,107 0 0

For the Farnham main sewerage works. Contract No. 2. Mr. James Lemon, M.Inst. C.E. Quantities supplied:—

John Jackson, Westminster	£14,888 0 0
Tom Street, Colchester	14,034 0 0
W. H. Dearle, Eastbourne	12,263 0 0
Prowse & Lee, Liverpool-street, London	12,216 0 0
W. J. Botterill, Cannon-street, London	11,997 0 0
Bottoms Bros., Battersea	11,945 0 0
E. Peill & Sons, Bromley	11,482 0 0
T. B. Hayter, Llandport	10,700 0 0
W. H. Hill & Co., Cardiff	10,700 0 0
Beadle Bros., Erith, Kent	10,617 0 0
William Schofield, Bucklersbury, London	10,590 0 0
Geo. Smith, Newcastle-on-Tyne	10,442 0 0
Geo. Cowdery & Son, Gloucester	10,442 0 0
H. J. Sanders, Southampton	10,400 0 0
John T. Whetham, Weymouth	9,975 0 0
Joseph Bull, Sons, & Co., Southampton	9,773 0 0
B. Cooke & Co., Battersea	9,686 0 0
T. P. Hall, Portsmouth	9,630 0 0
G. A. Smith, Dorking	9,390 0 0
R. C. Trimm, Walton-on-Thames	9,342 0 0

For the erection of St. Joseph's Novitiate, Blackrock, cc. Dublin (including main building, kitchen-wing, and completion of chapel), for Very Rev. J. Duff. Mr. John L. Robinson, M.R.I.A., architect, 198, Great Brunswick-street, Dublin. Quantities by Mr. H. M'Connell:—

Wm. Donnelly	£9,677 7 6
R. Toole	8,964 16 5
Thomas Mackay	8,827 0 0
Gahan & Son	8,416 6 0
P. Monks	8,000 0 0
Jno. Cunningham	7,744 6 2
M. Meade & Son	7,730 0 0
Greg. Murphy	7,550 0 0
S. Breen & Son	7,409 0 0
Jos. Long (accepted)	7,139 15 8

Accepted for lodge, Westgate-road, Beckenham, for Mr. Albemarle Cator. Mr. R. W. Collier, architect:—

Arnaud & Son, Bromley	£547 0 0

For alterations at the Crown Tavern, 27, Vere-street, Strand. Mr. William C. Livermore, architect and surveyor:—

Mansfield	£280 0 0
Mansell	261 0 0
England & Thompson (accepted)	253 0 0

For the erection of house and offices at North Finchley, for Mr. Boverton Redwood. Mr. E. J. May, architect. Quantities by Mr. R. C. Gleed:—

T. L. Green	£1,989 0 0
Maides & Harper	1,987 0 0
S. Parmenter	1,951 0 0
Fairhead & Son	1,936 0 0
Grover & Son	1,878 0 0
L. & W. J. Patman	1,875 0 0
W. Scrivener & Co.	1,865 0 0
E. Lawrance & Sons	1,850 0 0
W. Smith, Camberwell	1,839 0 0

For the erection of additional stabling for Messrs. Carter, Paterson, & Co., at their depôt, Maple-road, Penge, under the superintendence of Mr. William Eve, architect, Union-court, Old Broad-street:—

Harris & Wardrep	£984 0 0
Aldridge & Jenvey	880 0 0
F. Higgs, Station Works, Loughborough Junction (accepted)	790 0 0

Accepted for warehouses, 180 ft. by 60 ft. and 160 ft. by 40 ft., at Millwall, for Mr. J. T. Morton, under the superintendence of Mr. William Eve, architect, Union-court, Old Broad-street:—

Harris & Wardrop.

[On Schedule of Prices.]

For rebuilding St. Michael's Vicarage, Wakefield. Mr. William Watson, architect, Wakefield:—

Flower Bros. (Excavating, Brick, and Stone Work).
C. F. Rycroft (Slating).
C. Driver (Plastering).
J. Loyd (Carpenter and Joiner's Work).
G. Thompson (Plumbing, Glazing, Ironwork, Gasfitting, and Bellhanging).
C. Turner (Painting).

Total, £1,352 17s. 6d.

[Sixty tenders were received.]

For alterations to the Boar's Head public-house, Fleet-street. Mr. R. A. Lewcock, architect:—

Colls & Sons	£1,400 0 0
Kebble & Nelson	1,399 0 0
R. Marr	1,176 0 0
W. Shurmur	1,143 0 0
S. Godden	950 0 0
Jackson & Todd	919 0 0

For rebuilding on the sites of Nos. 465 and 467, Oxford-street, for Messrs. Hammond & Co. Messrs. T. Chatfeild Clarke & Son, architects. Mr. H. H. Leonard, surveyor:—

Ashby Bros.	£8,718	0	0
Clarke & Bracey	8,549	0	0
Holland & Hannen	8,388	0	0
Bywaters	8,334	0	0
E. Conder	8,255	0	0
Brown, Son, & Blomfield	8,250	0	0
Colls & Son	8,200	0	0
Patrick & Son	8,127	0	0
E. Lawrence & Sons	8,033	0	0
B. E. Nightingale	7,883	0	0
J. T. Chappell	7,768	0	0
Hall, Beddall, & Co.	7,684	0	0

For building a chapel at St. John's-hill, Wandsworth, for the Committee. Messrs. T. Chatfeild Clarke & Son, architects. Mr. H. H. Leonard, surveyor:—

H. S. Lee	£1,885	0	0
Adamson & Sons	1,650	0	0
W. Smith	1,528	0	0
Aviss & Sons	1,510	0	0
B. E. Nightingale	1,479	0	0
W. Robinson	1,450	0	0
Turtle & Appleton	1,440	0	0
W. Johnson	1,417	0	0
S. J. Scott	1,400	0	0
Searchfield & Son (accepted)	1,384	0	0

For renovating Primitive Methodist Church, Richmond, Surrey:—

Carless & Co., Richmond	£85	0	0
C. Maton, Kew	80	0	0
Lambert & Barness, Richmond	58	12	0
Robt. Johnson, Richmond (accepted)	58	0	0

For new printing-office for Messrs. H. & C. Franklin, Twickenham. Mr. John Warne, surveyor, Teddington:—

T. J. Messom	£415	0	0
J. Rose & Sons	375	0	0
F. Cordery	365	0	0
Potter (accepted)	350	0	0

For the restoration of the Parish Church at Morvil, Pembrokeshire. Mr. E. H. Lingen-Barker, architect:—
Griffiths & Thomas, Kilgerran (accepted) ... £455 0 0

For constructing a new road and sewer on the Dovecote House Estate, Green-lanes, Tottenham. Mr. William Hodson, jun., surveyor, Philip-lane, Tottenham:—
Thos. Rowley, West-green (accepted) £601 13 3

For alterations to the Caledonian public-house, Stoke Newington-road. Mr. J. Stiles, architect:—

Oldis Bros.	£3,350	0	0
S. Goodall	2,120	0	0
W. Shurmur	1,890	0	0
W. Mower	1,795	0	0
Steel Bros.	1,478	0	0

Accepted for the execution of sundry works of repair, alterations, and additions, sanitary works, &c., at the St. Pancras Infirmary, Dartmouth Park-hill, Highgate, for the Guardians of St. Pancras. Mr. H. H. Bridgman, architect, 42, Poultry:—
S. R. Lamble (lowest tender) £1,279 0 0

For fitting-up coffee-house at No. 55A, Houndsditch, for Mr. Ferry:—

G. Mower	£157	0	0
Sykes	154	0	0
Tilley	149	0	0

For further extension to lavatories, &c., at the Licensed Victuallers' Schools. Mr. W. T. Farthing, architect:—
W. Shurmur (accepted) £451 0 0

For the erection of a steam boiler and heater at the St. Luke's Workhouse, Shepherdess-walk, City-road, for the Guardians of the Holborn Union. Messrs. H. Saxon Snell & Son, architects, 22, Southampton-buildings, Holborn:—

Marshall & Co.	£415	0	0
Fraser & Co.	385	10	0
Fraser & Fraser	356	12	0
May Bros.	323	10	0
J. Collis (accepted)	262	18	0

Accepted for villa residence, Tangley Park Estate, Hampton. Mr. E. L. Swatman, architect, 38, Parliament-street:—
J. Singleton £750 0 0
[No competition.]

Accepted for alterations to the Prince of Wales public-house, North-street, Pentonville, for the City of London Brewery Company. Mr. W. J. Jewhurst, architect:—
W. Shurmur 324 0 0

SPECIAL NOTICE.—Lists of Tenders frequently reach us too late for insertion. They should be delivered at our Office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

TO CORRESPONDENTS.

Ed. P. and D. C.—M. and Co.—A. K.—C. H. (thanks).—A. W. R. S.—W. C. T.—P. Bros.—D. and Co.—W. F. P. (no space).—I. S.—C. B.

All statements of facts lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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PUBLISHER'S NOTICES.

GOOD FRIDAY.—"THE BUILDER" for the Week ending APRIL 4th will be issued on THURSDAY, the 2nd. Advertisements for insertion in that issue must therefore reach the Office before THREE p.m. on WEDNESDAY, the 1st. Alterations in Standing Advertisements, or ORDERS TO DISCONTINUE the same, must be at the Office by TEN o'clock on TUESDAY Morning.

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The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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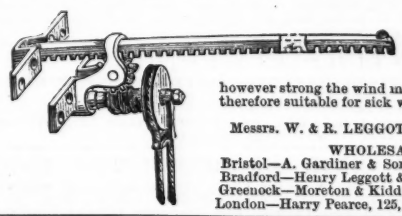

TESTIMONIAL.

January 17th, 1884.

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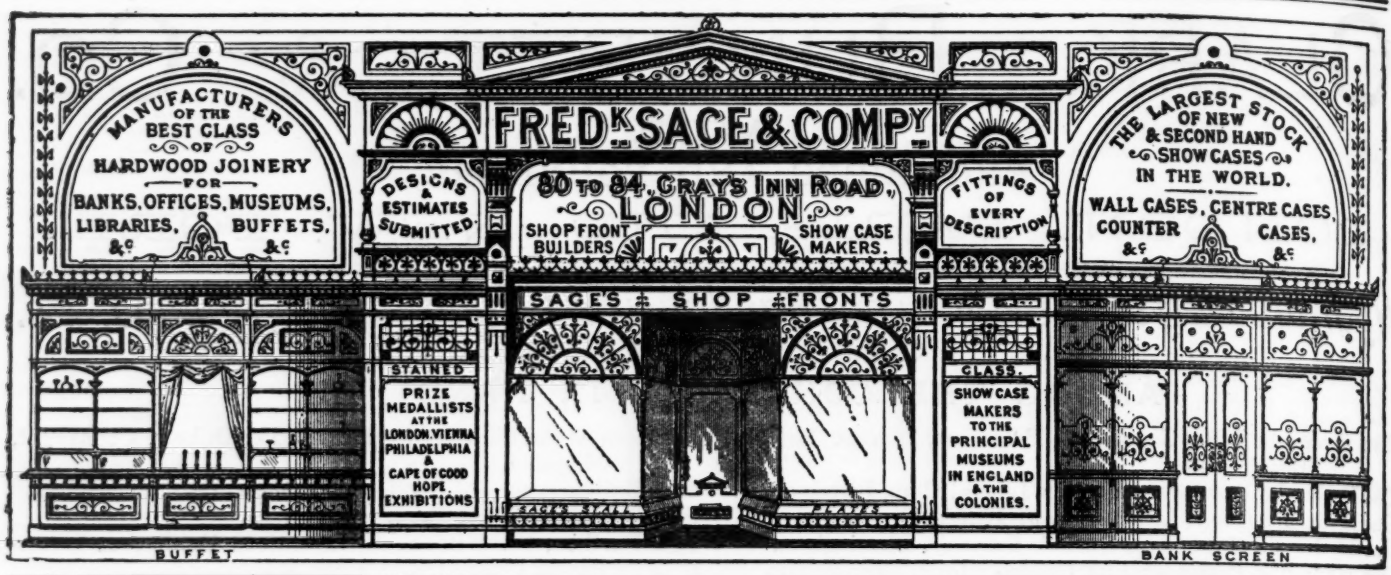
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CLERK of WORKS WANTED.
Salary 3*l.* per week.
Applications, with testimonials from employers only, to be forwarded to me at my Office, 62, Palace-chambers, Westminster, S.W. on or before SATURDAY, APRIL 4th next.
None need apply who have not had experience in similar works.
JAMES LEMON, M. Inst. C.E.
Engineer.
March 25th, 1885.

RESIDENT ENGINEER on SEWERAGE WORKS.
WANTED, at once, a Gentleman thoroughly qualified to act in the above capacity.—Apply, by letter only, stating fully age, qualifications, salary required, &c. to SMITH & AUSTIN, Civil Engineers, County Surveyor's Office, Hertford, Herts.
No original testimonials should be sent as no papers can be returned.

STOREKEEPER and TIMEKEEPER.—WANTED, a competent Man, to Keep Stores of a Corporation Depôt and take workmen's time. Only those with previous experience of these duties need apply. Salary 25s. per week.—Applications, accompanied by not more than three recent testimonials, to be sent to Box 266, Office of "The Builder."

STONE and MARBLE MASONS. — WANTED, several good, steady Men, accustomed to first-class banker work.—HARRY HEMS, Ecclesiastical Art Works, Exeter.

JOINER WANTED. — Experienced in Jobbing, Upholstery, Blind Curtains, &c. Constant work. Good references required.—Apply, by letter, to T. C. 27, High-street, Hampstead.

LEAD GLAZIER. — WANTED, Young Man (for job in a provincial shop) who can cut and make good plain geometrical work. — Address, with reference and terms to Box 265, Office of "The Builder."

TRAVELLER.—WANTED, an experienced MAN, to TRAVEL in the North of England, for Messrs. W. DENISON & SON, Clayfield Brick, Tile, and Sanitary Pipe Works, Mexborough. Commission.—Apply, F. WM. DENISON, 4, Gladstone-street, Hull.

TO TRAVELLERS. — WANTED, an energetic TRAVELLER accustomed to calling upon Corporations, Local Boards, and Architects. One having a knowledge of the Paving Trade preferred.—Apply, by letter only, to C. E. National Safe Deposit Company (Limited), Queen Victoria-street, E.C.

YOUNG MAN WANTED, with good address, to REPRESENT an old-established FIRM of ARCHITECTURAL METAL WORKS, to call upon Architects and Others in one half of the Postal Districts of London. One who has had some experience in an Architect's Office and can sketch would be preferred. Good testimonials required.—State age and experience, Box 262, Office of "The Builder."

BUILDER'S CLERK WANTED, in the suburbs.—Address, stating age, qualifications, references, and salary required, Box 155, Office of "The Builder."

JUNIOR CLERK WANTED in Builder's Office in City. With previous experience preferred. Age about 17 years. Hours six till six. State wages required.—Box 257, Office of "The Builder."

IMPROVER WANTED, in an Architect's Office, who can trace and write and print well.—Apply, in own handwriting, experience and salary (if any) required, to Box 263, Office of "The Builder."

YOUTH WANTED, as Saw Mill and Yard Labourer.—Apply at the Works, Worple-road, Wimbledon.

YOUTH WANTED, in a Builder and Decorator's Office in the North of London. Must have been similarly engaged, and quick at figures.—Apply, by letter, stating salary, age, and where last employed, to A. B. care of H. BISHOP, No. 129, High-street, Kingsland, E.

FOREMAN of SMITHS and KITCHEN RANGE and HOT-WATER FITTERS.—WANTED, a thoroughly qualified MAN, to Take the Management of a Small Factory. Must write a fair hand, understand estimating for work and drawings. Hours same as men.—Address, stating previous occupation and salary required, to Box 264, Office of "The Builder."

GRAINER and WRITER WANTED, immediately, for a Country Business. Constant employment for a suitable man.—Apply, stating wages, Mrs. SMITH, 34, St. Peter's-hill, Grantham.

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